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The Archives of the European Space Agency – A Snapshot

Prepared for the International Symposium
'The History of the European Space Agency'
London, 11–13 November 1998

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Cover: Some of the Instruments of Ratification of the ESA Convention by Member States
(courtesy of Ministère des Affaires Etrangères, Paris)

This brochure was compiled by Nathalie Tinjod, John Krige (ESA History Project Leader) and Gherardo Bonini (HAEC/EUI, Florence). They would like to thank the following for their kind assistance with its content: Simon Elvy (British Foreign and Commonwealth Office, London), Jean-Yves Kind (French Ministry of Foreign Affairs, Paris), Lorenza Sebesta and Arturo Russo (ESA History Project Team), and ESA colleagues Gabriel Lafferranderie, Brian Walker, Giuseppe Giampalmo, André Farand, Stéphane Corvaja, Dina Bauer and Roger Coeurdevey.

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Preface

About eight years ago, ESA concluded a contract with the European University Institute (EUI) in Florence to store the Agency's archives, then scattered over various offices and storerooms. Historically relevant material was to be collected together with other historical archives of the European Union in the magnificent Villa Il Poggiolo, which forms part of the EUI's complex of buildings in the rolling hills overlooking Florence. Shortly thereafter, the Agency invited a team of professional historians to recount the development of the European space effort, from its inception in the late 1950s up to the late 1980s, using these archives as their primary source material. The project was initially hosted by the EUI for a period of five years. It was reconfigured in 1996 when the team dispersed for professional reasons. This Symposium marks the successful conclusion of the 'ESA History Project'.

The impressive output of that History Project, which includes more than twenty self-standing reports in the ESA HSR series, many presentations, seminars and publications in the literature, and two large summary volumes to be produced by summer 1999, attests to the scope of this archive and its richness. It includes a complete set of official ESA documents (minutes of meetings, and the papers prepared for them). It also contains extensive records of personal correspondence, of internal memoranda, of draft projects, etc., many of them originating from outside the Agency. Files contributed by individual pioneers, as well as records of some unique interviews, have been added to the archive. The whole constitutes a vast and invaluable documentary log of the twists and turns of the European space effort over the last forty years.

The archive in Florence has already been exploited by the history team, as well as by about a dozen other researchers who have been interested in specific aspects of the European space programme. It is underpinned by an excellent database which allows keyword-based searches of its contents, and which helps one to rapidly identify the nature and location of relevant material (http://wwwarc.iue.it). Its liberal rules of access allow one today to study in detail the evolution of the European space effort, as conducted under the auspices of ESA, up to 1983. This brochure is intended both to provide a glimpse of its contents and to encourage scholarly research on one of the most important scientific and technological collaborative achievements of postwar Europe.

K.-E. Reuter
Head of the Director General's Cabinet

Introduction

In 1987, Mr K. Jaitner, Director of the Historical Archives of the European Communities at the European University Institute (EUI) in Florence, approached the Agency and suggested that its archives might be deposited there. He was particularly keen to build collections of papers produced by associations and organisations concerned with European construction. The idea was most attractive. At the time our premises were flooded with documents, and it was impossible to find anything that one wanted. Some people also felt that it was crucial to preserve ESA's past, remembering with a shudder the move of Headquarters to its present building, when the originals of the Agreements concluded by ELDO were found by chance in a corridor at ESTEC in an abandoned packing case!

Depositing the archives at the EUI implied that a choice had to be made regarding the terms of the contract that would define the rules of access to the material. This choice was left up to me. Normally archives are open after 30 years. I decided on 15 years. Mr Van Reeth, the then Director of Administration, signed the contract formalising the deposit in 1989, and the first transfers of material got under way. This required not only persuading the different services of the Agency to release documents that they often had in duplicate or triplicate, but also selecting those of historical interest. In parallel, we tried to rationalise the archiving of current and intermediary material. How was that to be done without the help of someone who had known ESA for many years and in all its details? Indeed nothing would have been possible at all without the invaluable assistance of Mr A. Dattner and Mrs E. Vermeer, who were aided by a working group composed of representatives of the establishments and the administrative personnel. To overcome resistance from many quarters, to demonstrate the efficiency of the proposed system and to illustrate why the Agency should concern itself with its documentary heritage, it has been necessary to write many reports.

The EUI's professionalism was an invaluable asset in this process, and slowly but surely we put the historical archive in place. It is likely that, without the advice, initiative and support of Mr E. Noel, the previous President of the EUI, of his successor Mr P. Masterson, as well of Mr J-M. Palayret, Director of the Archive, the project would have died. Mr G. Bonini was made responsible for the ESA papers in Florence. He dedicated his energy and his immense skill to the venture.

Subsequently, the Legal Service has launched a one-year pilot project for the intermediate archive with the help of a professional archivist, Miss E. Andreatta. This scheme was consolidated and extended thanks to the outstanding efforts during the past two years by Miss N. Tinjod, herself a researcher at the EUI. Prof. Paolo Galluzzi, Director of the Istituto e Museo di Storia della Scienza in Florence, kindly aided the Agency by placing her in Paris.

This kind of project, which necessarily upsets deeply entrenched habits and ways of working, requires the unwavering support of senior members of an organisation. I would like to take this opportunity personally to thank Prof. R. Lüst, Mr G. Van Reeth and Mr K- E. Reuter who believed in this project from its inception, and all of whom have contributed to its success.

Gabriel Lafferranderie
Legal Adviser

Recognition that the Agency is responsible for its documentary heritage came late. The organisation of the historical archive was just in time to prevent irreplaceable losses. The intermediate archive pilot was run on a shoestring. Despite all this we have come a long way. I now have the enviable task of helping to develop and implement a rational policy built on the experience and achievements of my predecessors.

What scope do we have for policy? I believe it to be very wide. The European Space Agency, the focus and locomotive for the development of the European space effort, is uniquely placed to build and implement a comprehensive policy. The Agency is positioned to lead in managing the record of European achievements in its mandated field. It is the Agency that must ensure that these records are managed, conserved, accessible and of use to the Space community.

Today, the ready availability of powerful, and inexpensive, information management tools coincides with a growing realisation of the fundamental importance of organised record collections. Policy makers, technical leaders and business managers need access to that dearly bought information kept in filing cabinets and document stores. We have the key.

Brian M. Walker
Associate Director for Information Systems

Archival Sources for the History of ESA

This brochure brings together a number of documents chosen to illustrate key steps in the history of the European Space Agency, and its two predecessor organisations, ESRO (for scientific research) and ELDO (for the development of a heavy launcher). Many of them are to be found in ESA's historical archives, which are based in the European University Institute (EUI) in Florence, where they are in the public domain and available for consultation by all bona fide researchers*. Others are less easily accessible. We would particularly like to thank the Division de la Conservation des Traités of the Ministère des Affaires Etrangères in Paris and the Foreign and Commonwealth Office in London for allowing us to reproduce parts of the many official documents regarding the European space effort held in their custody.

Scientists interested in exploiting space for research purposes were the driving force behind the collaborative European space effort. Central to this initiative were Edoardo Amaldi and Pierre Auger, two scientific statesmen who had spearheaded the development of CERN (the European Organisation for Nuclear Research) a decade before. Early in 1959, the Rome physicist circulated a document among scientists and science administrators in several European countries proposing that the time was ripe to establish a collaborative European space research activity modelled on CERN (Exhibit 1). Encouraged by the positive reaction, about two dozen of them met to constitute a study group under the chairmanship of the leader of the British space science community, Sir Harrie Massey in June 1960 (Exhibit 2). The group quickly organised a conference of high-level science administrators to discuss their programme. It met, symbolically, in CERN's new main auditorium just outside the laboratory in late November 1960 (Exhibit 3). Protracted negotiations led to the signature of the ESRO Convention in March 1962 (Exhibit 4).

Five different establishments were set up in the course of the 1960s to implement the European space effort: the European Space Research and Technology Centre, ESTEC, in Noordwijk in The Netherlands for research, design, development and testing activities, the European Space Operations Centre, ESOC, in Darmstadt, Germany (Exhibit 5), a launching range (Esrange) in Kiruna, Sweden, and a space research institute ESRIN at Frascati in Italy (Exhibit 6). Headquarters were established in Paris.

* According to ESA/C(91)10 establishing the Rules of Access, ESA's Historical Archives are open for scholarly research after 15 years (except for confidential documents).

Amaldi and Auger's original idea was to create a European NASA, i.e. a single organisation dedicated to all aspects of space, including launcher development. The cost, and the political sensitivity of building launchers in the early 1960s excluded many smaller, neutral countries from the scheme, however. What is more, many practising space scientists were against the idea, fearing that the far more expensive launcher would suck away funding from the science programme. They also had an alternative. In March 1959, the United States had offered to assist scientists from other countries in preparing and launching either single experiments as part of a larger payload, or groups of experiments comprising complete payloads (Exhibit 7).

It was the British Government that took the lead in developing a European launcher, notwithstanding the doubts of some scientists. Warming to closer links with the newly-established European Common Market, and keen to find a new role for its outmoded ballistic missile Blue Streak, Britain proposed that it be used as the basis of a heavy civilian launcher in a European framework. Five other nations, along with Australia, who offered her launching base in Woomera, joined in the scheme. In 1962 they signed the Convention establishing ELDO (Exhibit 8). ELDO's mission was to build a three-stage heavy launcher called 'Europa'. Its first stage was Blue Streak, its second stage was built in France, and its third stage was built in Germany. Italian industry provided the test satellite, while Belgium and The Netherlands supplied down-range guidance and telemetry systems.

ESRO's planned scientific programme was laid out in the famous 'Blue Book'. In the first eight years of the organisation's life, it foresaw the launch of over 400 sounding rockets, 30 small satellites and space probes, and four large satellites (Exhibit 9). This proved to be far beyond the industrial and financial resources available. After a period of adjustment, the Science Programme settled into its stride, however, becoming a solid core of the collaborative European space effort. With the creation of ESA in 1975, whilst most major programmes were made optional, science was made a mandatory part of its activities, with its own permanent Science Programme Committee (Exhibit 10). Of the many notable achievements of the Science Programme, the one that has created perhaps the greatest public impact so far was the encounter of the Giotto spacecraft with Halley's comet in 1986 (Exhibit 11). Indeed, the mid-1980s saw a major new commitment by European Ministers to an enhanced ESA Science Programme articulated around the carefully planned Horizon 2000 project (Exhibit 12).

ELDO was less successful than its sister organisation ESRO. After almost a decade of activities marked by major time slippages and cost overruns, it failed to put a single satellite into orbit. An explosion of the Europa-II rocket in November 1971 proved to be a turning point (Exhibit 13). A scathing report by a committee of enquiry headed by ELDO Secretary General Robert Aubinière catalogued a history of bad project management, sloppy industrial work and the absence of any overarching authority to control industry and to ensure system integration (Exhibit 14).

The conquest of space by the Superpowers was originally fused with considerations of military strength and national prestige. By the late 1960s, however, the stakes began to change. Space became a domain for commercially and socially useful activities –

telecommunications, meteorology and earth observation, aerial and marıtıme navigation, and so on. Politically, the emphasis shifted from national rivalry to international collaboration. Faced with these changes in the meaning of space, European Ministers began to redefine policy on this side of the Atlantic.

Two considerations dominated their thinking. Firstly, some of them, and notably the French representatives, were convinced that it was essential for Europe to develop an autonomous launch capability. This was seen as the cornerstone of a rational space policy which included commercially competitive telecommunications satellites as one of its main elements. Negotiations then under way with NASA to launch the Franco-German satellite Symphonie fuelled French concerns. The United States' authorities were reluctant to launch the satellite unless its use was restricted to experimental activities (Exhibit 15). In July 1973, the Ministers thus agreed to develop collectively a new European heavy launcher with geostationary capability to replace Europa and to be launched from the equatorial base at Kourou in French Guiana. The design was derived from a project then under study in the French space agency CNES. Originally labelled LIIIS, an inspired search for a new name for the launcher (Exhibit 16) was concluded when French Minister Charbonnel finally settled on 'Ariane'.

The second issue dealt with by Ministers concerned not competition, but collaboration with the United States.

In the wake of the Moon landing in 1969, NASA launched a 'post-Apollo' programme which included the Space Shuttle among its panoply of activities. They suggested that Europe might like to play a role in this programme. The German Delegation saw in this offer an opportunity for Europe to acquire the kind of project-management skills that were lacking in ELDO. Tortuous negotiations finally led to Bonn taking prime responsibility for Spacelab, a manned shirt-sleeve-environment laboratory and a number of unpressurised supporting pallets and instruments (Exhibit 17). Concerns over technology transfer (Exhibit 18) led the United States to insist that there be 'clean interfaces' between Spacelab and the Shuttle cargo bay in which it was transported.

In conjunction with these decisions, Ministers decided to set up a single space agency to replace ESRO and ELDO, and to harmonise national activities with the European programme. The new European Space Agency was officially established in 1975 (Exhibit 19). In addition to the mandatory Science Programme, it was dedicated to undertake the collective development of Ariane and Spacelab, as well as of a number of applications satellites, notably for telecommunications and meteorology. The meteorological satellite project was derived, in fact, from a French project which was Europeanised in the framework of the debates just described (Exhibit 20).

The United States was not only the major power with which ESA now strengthened its international relations. Bridges were also built with the Soviet Union (Exhibit 21) and with China (Exhibit 22), as well as countries in Asia and Latin America (Exhibits 23 and 24). The number of ESA Member States expanded (Exhibit 25), and ESA offices were opened in a number of capital cities - Brussels (Exhibit 26), Moscow, and Washington.

These major programmes matured in the early 1980s. Europe had now closed the gap that had previously separated her from the United States in many areas of space technology. The (ultimately unsuccessful) petition by an American private launch operator, Transpace Carriers Inc., in which it was claimed that Ariane was unfairly subsidised by European Governments (Exhibit 27) indicates just what a serious rival – and important partner – she had become. Encouraged by their success, and aware of the major space initiatives being undertaken by the Reagan administration, the Space Ministers of the ESA Member States meeting at The Hague in 1987 embarked on another important and interlocking set of activities (Exhibit 28).

Central to the new Long-Term Space Plan was European participation in the International Space Station being promoted by the United States. The Hague meeting agreed in principle to develop a new, more powerful heavy launcher Ariane-5, a reusable space transporter called 'Hermes' similar to the Shuttle, and 'Columbus', one element of which was a microgravity research laboratory integrated with the Space Station, and another of which co-orbited with the Station and was capable of being serviced by Hermes, and a third, the Polar Platform, was dedicated to earth-observation missions. Provision was also made for the development, in principle, of a Data-Relay Satellite for telecommunications. The implication that Europe was prepared to develop a man-in-space programme beyond Spacelab was confirmed by the setting up, in 1990, of a European Astronaut Centre in Cologne (Exhibit 29).

This ambitious programme was subsequently modified in response to a number of political and economic factors, notably the radical change of the international context symbolised by the collapse of the Berlin wall and the subsequent reunification of Germany, and the deregulation of markets along with the demand for improved returns on the investments made by Governments in the space sector. Hermes was reoriented (Exhibit 30) when the United States along with some ESA Member States, Canada and Japan invited Russia to join the International Space Station programme (Exhibit 31).

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1. Text on *Space Research in Europe*, written by Prof. Edoardo Amaldi and circulated among European scientists and science administrators, promoting the establishment of a European collaborative space effort, 30 April 1959 (HA/IUE file COPERS-1).

2. Attendance 'register' for the GEERS meeting on the morning of Friday 24 June 1960 (HA/IUE file 'Origines de la COPERS II', Jean Mussard).

3. Delegates to the Meyrin Conference, held from 28 November to 1 December 1960, photographed in front of the Main Building at CERN, in Geneva (HA/IUE file 'Origines de la COPERS IV').

4. ESRO Convention, done in Paris on 14 June 1962 (French and English) and entered into force on 20 March 1964, and the French Ratification Instrument signed by General De Gaulle. Original deposited with the Ministère des Affaires Etrangères, Paris, Division de la Conservation des Traités.

5. Agreement concerning the European Space Operations Centre (ESOC) between the European Space Research Organisation (ESRO) and the Government of the Federal Republic of Germany, made in Darmstadt on 8 September 1967 (English, French and German).

6. Agreement between the European Space Research Organisation (ESRO) and the Government of the Italian Republic concerning the European Space Research Institute (ESRIN), made in Rome on 23 June 1970 (English, French, and Italian).

7. Formal Offer of International Cooperation by the USA through COSPAR, March 1959, Annex 4 (see: H. Massey and M.O. Robins, *History of British Space Science,* Cambridge University Press, 1986, p. 462).

8. The ELDO Convention, done in London on 29 March 1962 (English and French), opened for signature until 30 April 1962, and entered into force on 29 February 1964. Original deposited with the UK Foreign and Commonwealth Office, London.

9. The 'Blue Book' (Rapport du Groupe de travail scientifique et Technique à la Commission Préparatoire Européenne de Recherches Spatiales, 2e édition, Décembre 1961).

10. Demand for a permanent Science Programme Committee in the Draft Convention of the European Space Agency : telex from Sir Harrie Massey, Chairman of the Provisional Space Science Board for Europe to the President and Secretary General of the Committee of Alternates of the European Space Conference. CSE/CS(75)15, Annex (HA/IUE ESC-817).

10bis. United Kingdom Proposal for Article X (Organs) and XII (The Science Programme Committee). European Space Conference, Committee of Alternates. CSE/CS(75)WP/9 (HA/IUE ESC-817).

11. Encounter of ESA's Giotto spacecraft with Halley's Comet.
Møssage of congratulations from Prime Minister Margaret Thatcher to the European Space Agency, in March 1986.
Encounter '86 – An International Rendezvous with Halley's Comet (ESA Brochure BR-27, November 1986).
Letter of thanks from President Ronald Reagan to Prof. Reimar Lüst, 20 May 1987.

12. Message from Roger Bonnet, ESA's Director of Science, to the Wide Scientific Community, dealing with the Ministerial Council held in Rome on 30-32 January 1985, dated 6 February 1985.

13. Europa-II ready for launch at the Guiana Space Centre. Inset: First launch on 5 November 1971.

14. ELDO's demise - Final Report of the Project Review Commission, 19 May 1972: Summary of main conclusions. ELDO/C(72)18 (HA/IUE ELDO-1565).

15. Collaboration with NASA on the Post-Apollo Programme. Extract from a letter from Minister Th. Lefèvre to Mr A. Johnson, US Under Secretary of State, 3 March 1971. CSE/Comité Ad Hoc(71)12, 22 April 1971 (HA/IUE ESC-6449).

16. The search for a name for the new European launcher. Paper circulated by Mr André Lebeau at the ESRO Council meeting on 1 August 1973 (from 'Ariane – The Road to Independence', ESA SP-1060, p. 32).

17. Memorandum of Understanding between NASA and ESRO for a Cooperative Programme concerning the development, procurement and use of a space laboratory in conjunction with the Space Shuttle system, signed on 14 August 1973 (ESRO/C(73)45, rev. 1; see also HA/IUE ESRO 3780 and 7073).

18. Objections in the USA to the technology transfer to Europe: 19th Status Report on the US Post Apollo Programme. CSE/CS/Post-Apollo(72)WP/7, 15 July 1972 (HA/IUE ESC-1187).

19. The text of the ESA Convention was approved by the Conference of Plenipotentiaries held in Paris on 30 May 1975. ESA functioned de facto from 31 May 1975. The ESA Convention entered into force on 30 October 1980.

20. Letter from the French Delegation to the Chairman of the ESRO Council, 25 June 1971, proposing the Europeanisation of Meteosat. ESRO/C(71)36, Annex I (HA/IUE ESRO-578).

20bis. Intergovernmental Conference on an operational Meteosat system, at ESA Headquarters in March 1983.

21. Cooperation with the USSR, ESRO/C(72)40, 19 July 1972 (HA/IUE ESRO-649). Cover Note: Summary of the Results of a Meeting between Delegations of the Academy of Sciences of USSR and ESRO, Moscow, 26-27 June 1972, signed by B. Petrov (Academy of Sciences) and J.A. Dinkespiler (ESRO).

21bis. Agreement between ESA and the Government of the USSR concerning cooperation in the field of exploration and uses of Outer Space for peaceful purposes, signed in Paris on 25 April 1990 Prof. Reimar Lüst (ESA) and Ambassador I. Riabov (USSR).

22. Cooperation with China. Aide Mémoire intended to record the outcome of discussions during a visit by an ESA Delegation to Peking, on 12-19 February 1979. ESA/C(79)56 (HA/IUE ESA-581).

23. Cooperation with India. Minute of a letter from H. Bondi (Director General of ESRO) to Prof. Vikram A. Sarabahi (Chairman of the Indian Space Research Organisation), dated 25 February 1971.

23bis. Cooperative Agreement between the President of India, represented by the Indian Space Research Organisation, and the European Space Agency, made in two originals copies (in Hindi and English), signed on 14 April 1988.

24. Agreement between ESA and the Federal Republic of Brazil on the setting-up and use of tracking and telemetry facilities on Brazilian territory, made in two originals (in French and Portuguese), signed in Brasilia by R. Gibson (ESA) and M.B. Potyguara on 20 June 1977.

25. Ratification Instrument. Agreement between the Republic of Austria and ESA on Austria's accession to the Convention of the European Space Agency, and Related Terms and Conditions, signed on 12 December 1985 and entered into force on 1 April 1986.

26. Headquarters Agreement between the Kingdom of Belgium and the ESA, signed by J-M. Luton (ESA) and His Excellency A. Cahen, on 26 January 1993.

27. Minute of a Letter from Prof. H. Curien (Chairman of the ESA Council) and E. Quistgaard (Director General of ESA) to US Ambassador E.G. Galbraith, dated 7 June 1984.

27bis. Aide mémoire presented to the President of United States by the member Governments of the European Space Agency at the conclusion of consultations held with the US Government on the Commercialisation of Space Launch Activities, part II: Summary and Conclusions (following the Petition seeking presidential action under Section 301 of the Trade Act of 1974 as amended (19 U.S.C § 2411, et sq.) filed on the behalf of the Civil, Expendable Launch Vehicle Services Industry by Transpace Carriers, Inc. against the Governments of Belgium, Denmark, France, Germany, Ireland, Italy, The Netherlands, Sweden, Spain, Switzerland and the United Kingdom and their space-related instrumentalities, 25 May 1984).

27ter. Decision by the US President ending assertions by US Companies against Ariane Commercial Launch Policies. Note to the Editors, attached to *ESA News Release No. 22*, 24 July 1985.

28. Message from François Mitterrand, President of the French Republic, to Prof. Reimar Lüst, Director General of ESA, dated 10 November 1987, after the Ministerial Conference in The Hague.

29. Agreement between the European Space Agency and the Government of the Federal Republic of Germany concerning the European Astronauts Centre, made at Köln-Porz on 10 May 1990 and signed by Prof. Reimar Lüst and Dr. Heinz Riesenhuber.

29bis. ESA Council approves the Agreement between the Federal Republic of Germany and the Agency for the setting up of the European Astronauts Centre (EAC) in Cologne - *ESA News Release No. 8*, 21 March 1990.

29ter. Astronauts of the European Space Agency, in September 1998. Left to right : Christer Fuglesang, Umberto Guidoni, Claude Nicollier, Gerhard Thiele, Hans Schlegel, Jean-François Clervoy, Jean-Pierre Haigneré, Leopold Eyharts, Thomas Reiter, Roberto Vittori and Paolo Nespoli.

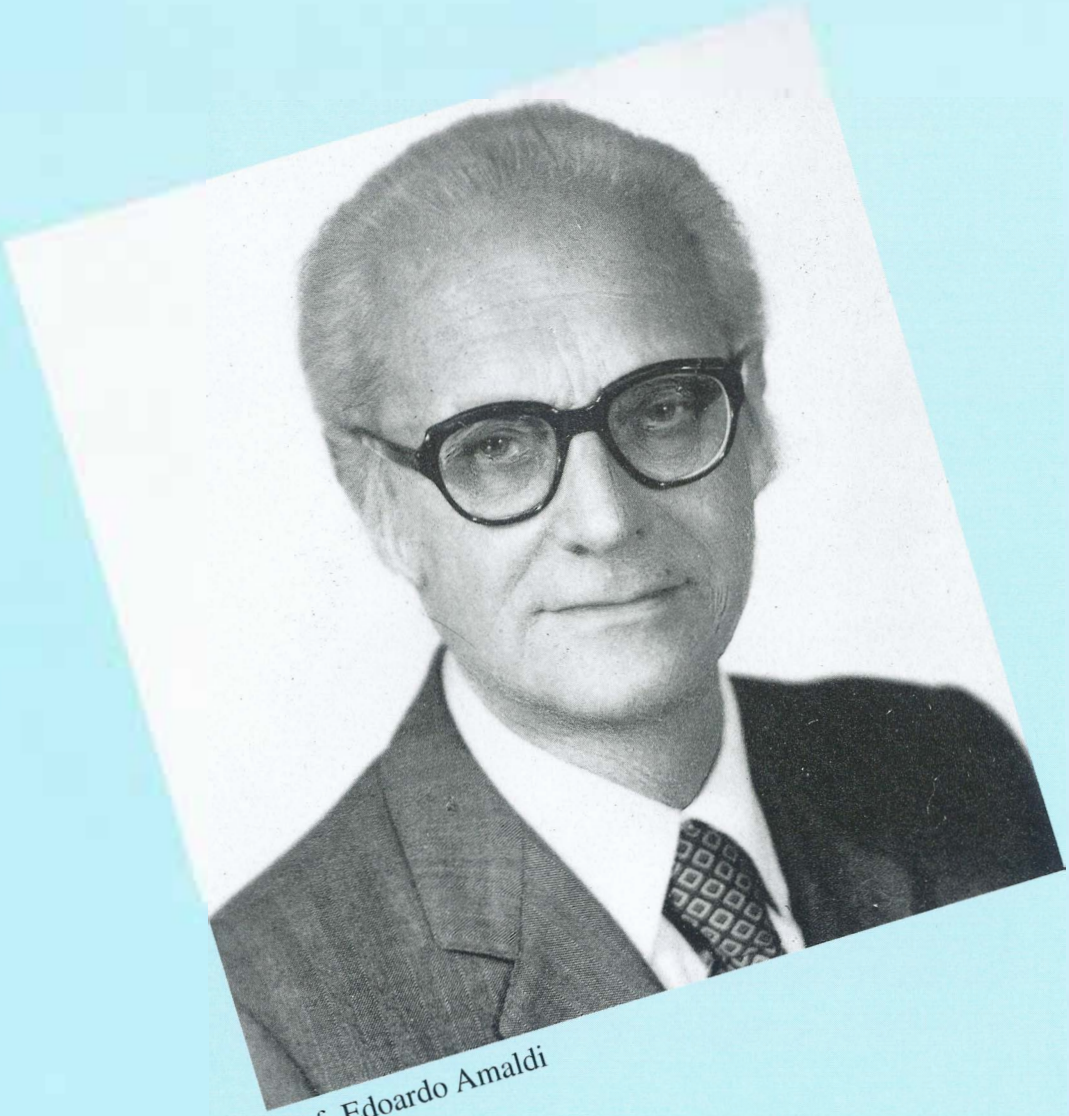
30. Extract from the Declaration on the European Manned Space Transportation Programme (the re-oriented Hermes Programme), drawn up on 15 December 1987, amended on 23 November 1994 (ESA/C(94)146).

31. Joint Statement of the Space Station Partnership, dated 6 December 1993. ESA/NASA MOU Negotiation Record/G. Giampalmo, No. 6 (re-typed)

31bis. Signature of the International Space Station Memorandum of Understanding at the US State Department, Washington DC, on 29 January 1998. Seated, from left to right: Yuri N. Koptev (RSA), Antonio Rodotà (ESA), Daniel S. Goldin (NASA), William Mac Evans (CSA) and Isao Uchida (NASDA).

31ter. Memorandum of Understanding between ESA and NASA concerning cooperation on the civil International Space Station (two originals in English, French, German and Italian).

Exhibits



Prof. Edoardo Amaldi

1. Text on *Space Research in Europe*, written by Prof. Edoardo Amaldi and circulated among European scientists and science administrators, promoting the establishment of a European collaborative space effort, 30 April 1959 (HA/IUE file COPERS-1)

Introduction to the Discussion on

Space Research in Europe

1. - Space research has become an essential part of our civilization in the second half of the twentieth century. This fact is fully recognized not only by the world of science, but by the world of politics as well.

The General Assembly of the United Nations, at its 792nd Plenary Meeting, on December 13, 1958, established an Ad Hoc Committee whose terms of reference are intended to ensure that the scientific results of outer space research benefit all the countries of the world (Appendix 1).

The International Council of Scientific Unions (I.C.S.U.) set up two committees in the course of 1958. One of them, the so-called Ad Hoc Committee on Contamination by Extra-terrestrial Exploration (CETEX), was given the task of specifying conditions of space research such as to avoid biological and radioactive contamination of extra-terrestrial objects, such as the moon and various planets, and to avoid also any change in the conditions surrounding them at present. Having formulated a number of important recommendations (Appendix 2), CETEX was discontinued and its activities absorbed by a new standing committee set up by I.C.S.U. This committee, which is known as the Committee on Space Research (COSPAR), has the task of co-ordinating and promoting the development of space research on the part of the world scientific community (Appendix 3).

2. - It may be well to recall that research on outer space by means of rockets and satellites owes its origin to the organization set up for the International Geophysical Year (I.G.Y.), as will be seen from the records of the Comité Special de l'Année Géophysique Internationale (C.S.A.G.I.), some relevant passages of which are reproduced in Appendix 4. In particular, Recommendation g) of the C.S.A.G.I. General Assembly, Rome, September 1954,

is at the basis of all present and future space research, even though the latter's subsequent development has no doubt been influenced also by military considerations.

The first scientific results obtained by means of rockets and satellites during this early stage of space research are of the greatest importance and range over the most varied fields of science. The following studies may be mentioned:

A. Rocket observations:

a) Structure of the earth's atmosphere at altitudes up to 200 km: pressure, density, temperature, chemical composition, winds;
b) ionosphere: ionic composition, ionic density, perturbations;
c) auroral particles and soft auroral radiations;
d) solar radiation with particular reference to the emission of X-rays and ultraviolet rays in solar flares;
e) the earth's magnetic field and the equatorial ionospheric electrojet;
f) cosmic rays: latitude effect at an altitude of 90 to 150 km.

B. Satellite observations:

a) Discovery of the existence of two so-called Van Allen radiation belts;
b) study of air density at altitudes up to 400 km;
c) micrometeorite measurements;
d) determination of the efficacy of temperature control within a satellite.

Some of these results, such as the discovery of a double radiation belt, are of exceptional importance, in that they open up a whole new field of hitherto unexplored and vast phenomena involving the properties of the earth, the sun, and cosmic radiation. Even so, these first results are no more than a modest beginning in a field of research so enormous and important that it far surpasses anything that can be imagined today.

3. - So far the Soviet Union and the United States of America are the only countries to have been able to mobolize the human and financial resources for important activities in this field. Other countries of lesser financial, industrial and organizational potentials, even though possessing the finest scientific traditions, are bound to find it very difficult to establish themselves in this field. It might seem, therefore, as if this type of research were destined to remain a monopoly of the United States and the Soviet Union, and if, in particular, all the countries of Europe would have to remain mere spectators of the grand endeavours to the East and West of our continent.

However, an International Organization pooling the resources of, say, ten European countries might well be able to tackle the problem and to enable the scientists of Europe to make a valuable contribution to the exploration and study of outer space.

4. - The creation of such a European Organization is essential and urgent, if we are not to have a situation, twenty years hence, where there is an unbridgeable gap, both on the scientific and on the technological and industrial plane, between the countries capable of launching vehicles through interplanetary space and those incapable of doing so. Apart from such scientific results as were mentioned above, the launching of satellites requires and occasions extraordinary industrial development in the field of propellants, metallurgy, electronics, etc., and this development in turn has its effect on the country's entire industry.

The urgency of the problem stems from the need to make sure that the existing gap between the Soviet Union and the United States on the one hand, and the countries of Europe on the other, does not widen further to the point of eventually becoming all but unbridgeable.

5. - The financial and human resources required for the creation of such an organization are not beyond the means

of the caountries of Europe. With a budget twice as large as the European Organization for Nuclear Research (C.E.R.N.) now has, that is, with funds in the neighbourhood of 130 million Swiss francs per year, a European Space Research Organization could achieve impressive results within four or five years. The human resources are difficult, but not impossible to find; the technicians required are engineers, chemists, metallurgists, experts in electronics, physicists, etc. A good many Europeans highly qualified in these fields are now working in foreign countries, and they would no doubt be attracted to an organization of the kind proposed.

6. - The proposed European Space Research Organization should have no other purpose than research and should, therefore, be independent of any kind of military organization and free from any Official Secret Act. In other words, its very structure should reflect the international scientific character of space research, in accordance with the principles enounced in the decisions of the U.N. General Assembly (Appendix 1) and of I.C.S.U. (Appendices 2,3 and 4).

A purely scientific organization would not only have immense moral authority, but it would, most probably, be the only kind of organization at present practicable in Europe, given that its constitution will have to be ratified by the Parliaments of the member countries.

7. - The European Space Research Organization might be well advised to begin its activities with a very closely defined programme. It could, for example, start with only two problems. One of these might be standard problem of the kind already solved by the U.S.S.R. and U.S.A., so chosen that its solution could be expected within the relatively short time of, say, three to four years. This would have the advantage of giving time and opportunity for the development of certain auxiliary techniques, personnel training, the

solution of many problems by European industry, etc.

The second research problem, on the other hand, should be comparable with the greatest enterprises undertaken simultaneously by the United States and the Soviet Union. This would obviously require a much larger effort over greater number of years, for instance six to seven.

8. - The European Space Research Organization would have to set up international research laboratories and launching sites. Both must be free from any restrictions, in the same manner as all purely scientific institutions.

Many problems could, however, be entrusted to national research organizations and particular industries, in accordance with a proper plan worked out in advance. Once the European Organization begins to launch space vehicles, even though small ones, the tracking and interpretation of the information transmitted to earth could undertaken by a large number of stations distributed throughout the universities and research institutes of the member countries, thus giving many scholars an opportunity to take part in space studies.

9. - The following procedure may be envisaged with a wiew to the creation of such an organization in the near future. Some European countries, e.g., Belgium, France, Germany, Italy and the Netherlands, might set up national commissions to examine the problems of space research. Each commission should be composed, in more or less equal numbers, of experts in the construction, launching and ground control of satellites on the one hand, and on the other of experts in the scientific problems of outer space (physicists, geophysicists, astrophysicists). These commissions should carry out a preliminary examination of the problem, by investigating the various relevant national resources and also by estimating the order of magnitude of the total human and financial resources

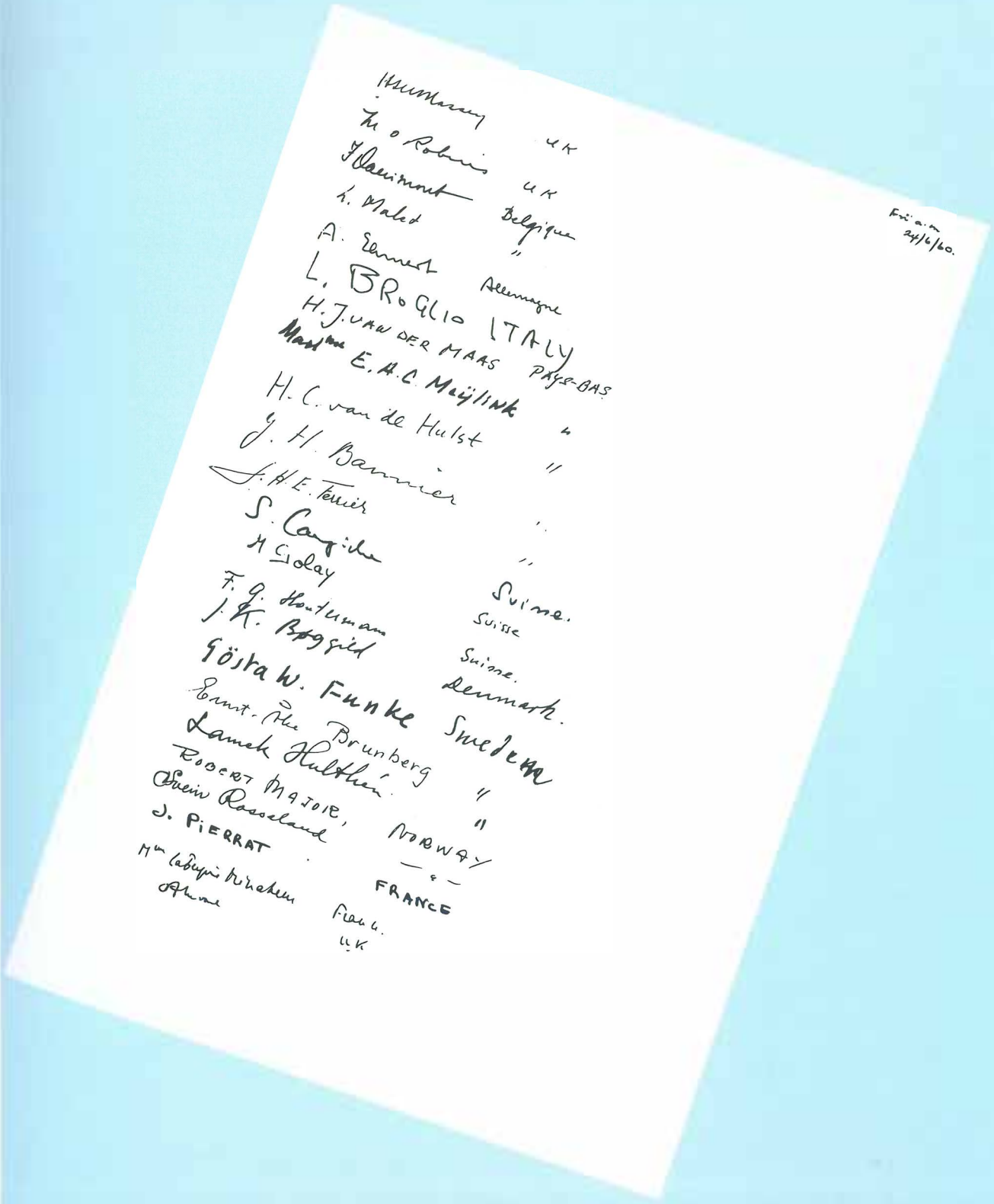
required in order to make an effective contribution to space research. The results of the various commissions' investigations could then be compared and discussed at an international conference, so as to work out a detailed programme for submission to the governments of the countries concerned.

This organizational stage should not exceed one year, so that European Organization, or at least a fairly well founded provisional precursor of it, may begin operating before the end of 1960. Only then could Europe hope to begin collecting useful information by about 1964 and to close the gap between herself and the Soviet Union and the United States before 1970.

If one of the existing European research organizations were to assume the task of co-ordinating the various countries' contributions towards the creation of the new Organization, the process of the latter's establishment might be speeded up considerably.

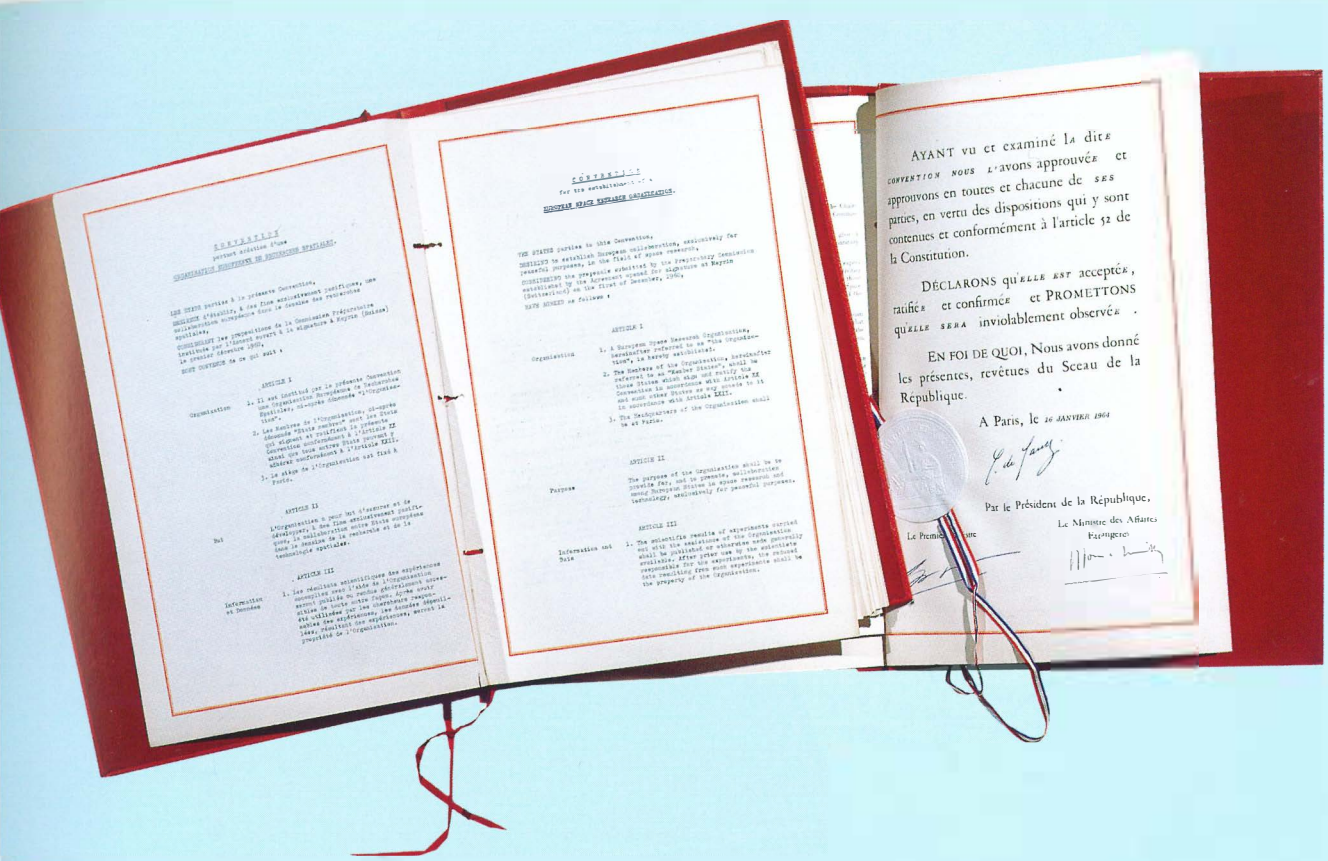
Edoardo Amaldi

Roma, april 30, 1959

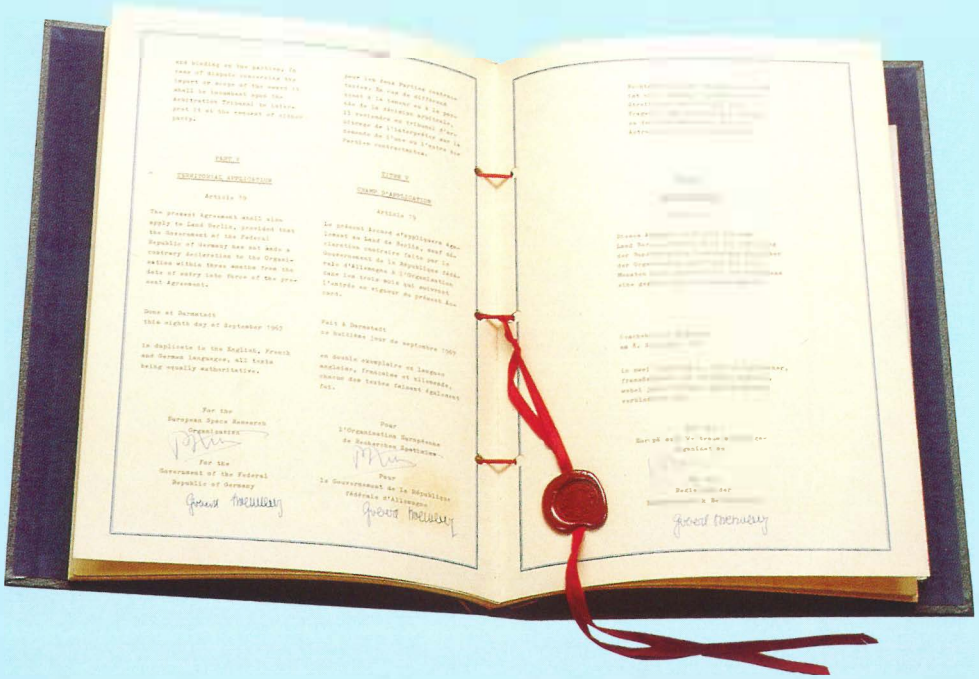


2. Attendance 'register' for the GEERS meeting on the morning of Friday 24 June 1960 (HA/IUE file 'Origines de la COPERS II').

3. Delegates to the Meyrin Conference, held from 28 November to 1 December 1960, photographed in front of the Main Building at CERN, in Geneva (HA/IUE file 'Origines de la COPERS IV').



4. ESRO Convention, done in Paris on 14 June 1962 (French and English) and entered into force on 20 March 1964, and the French Ratification Instrument signed by General De Gaulle. Original deposited with the Ministère des Affaires Etrangères, Paris, Division de la Conservation des Traités.



5. Agreement concerning the European Space Operations Centre (ESOC) between the European Space Research Organisation (ESRO) and the Government of the Federal Republic of Germany, made in Darmstadt on 8 September 1967 (English, French and German).

6. Agreement between the European Space Research Organisation (ESRO) and the Government of the Italian Republic concerning the European Space Research Institute (ESRIN), made in Rome on 23 June 1970 (English, French, and Italian).

Formal offer of international co-operation by the USA through COSPAR

March 1959

COSPAR has a truly historic opportunity to become an effective force for international co-operation in space research. This co-operation will be most fruitful and meaningful if the maximum opportunity to participate in, and contribute to, all aspects of space research can be provided to the entire scientific community. In this regard, COSPAR can serve as an avenue through which the capabilities of satellite launching nations and the scientific potential of other nations may be brought together.

The United States will support COSPAR in this objective by undertaking the launching of suitable and worthy experiments proposed by scientists of other countries. This can be done by sending into space either single experiments as part of a larger payload or groups of experiments comprising complete payloads.

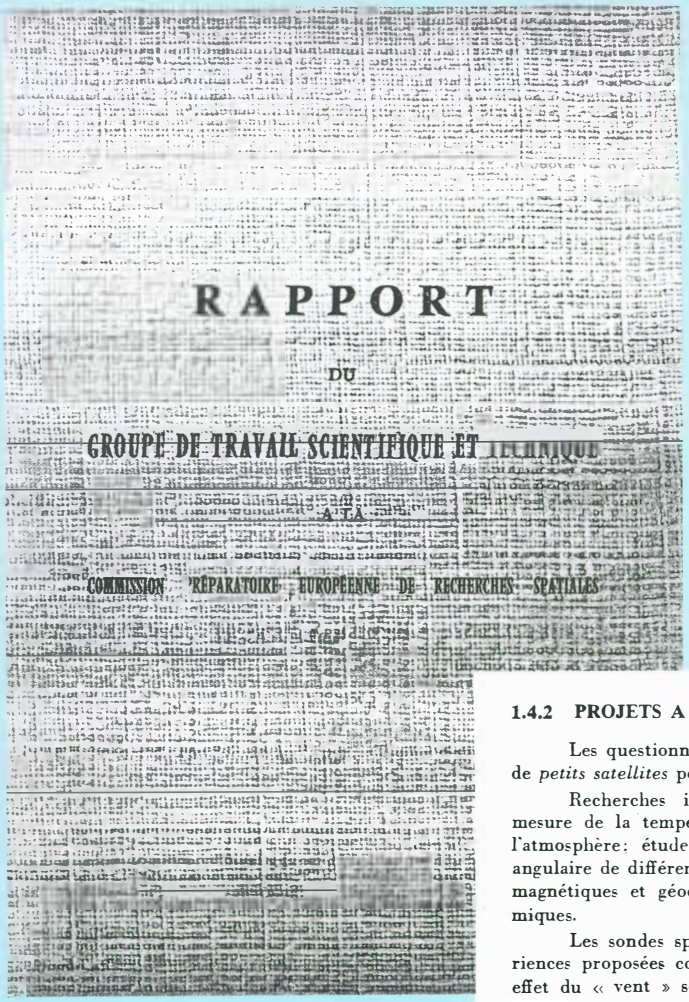
In the case of individual experiments to become part of a larger payload, the originator will be invited to work in a United States laboratory on the construction, calibration, and installation of the necessary equipment in a US research vehicle. If this is impossible, a US scientist may be designated to represent the originator, working on the project in consultation with him. Or, in the last resort, the originator might prepare his experiment abroad, supplying the launching group with a final piece of equipment, or 'black box', for installation. However, this last approach may not be practical in most cases.

In the case of complete payloads, the United States also will support COSPAR. As a first step, the delegate of the US National Academy of Sciences is authorized to state that the US National Aeronautics and Space Administration will undertake to launch an entire payload to be recommended by COSPAR; this payload may weigh from 100 to 300 lb and can be placed in an orbit ranging from 200 to 2000 miles altitude. It is expected that the choice of the experiments and the preparation of the payload may require a period of one-and-a-half to two years. NASA is prepared to advise on the feasibility of proposed experiments, the design and construction of the payload package, and the necessary pre-flight environmental testing. The US delegate will be pleased to receive COSPAR's recommendations for the proposed payload when they can be readied.

In further support of COSPAR, the US delegate would like to call attention to the availability of resident research associateships at the National Aeronautics and Space Administration in both theoretical and experimental space research. These provide for stipends of $8000 per annum and up.

7. Formal Offer of International Cooperation by the USA through COSPAR, March 1959, Annex 4 (see: H. Massey and M.O. Robins, History of British Space Science, Cambridge University Press, 1986).

8. The ELDO Convention, done in London on 29 March 1962 (English and French), opened for signature until 30 April 1962, and entered into force on 29 February 1964. Original deposited with the UK Foreign and Commonwealth Office, London.



9. The 'Blue Book' (Rapport du Groupe de travail scientifique et Technique à la Commission Préparatoire Européenne de Recherches Spatiales, 2e édition, Décembre 1961).

1.4.2 PROJETS A MOYENNE ÉCHÉANCE (petits satellites et sondes spatiales) :

Les questionnaires mettent en évidence le besoin de disposer de place à bord de *petits satellites* pour des expériences dans les domaines suivants :

Recherches ionosphériques et radio-astronomiques de différentes sortes; mesure de la température. de la pression, de la densité et de la composition de l'atmosphère: étude du flux. de la distribution énergétique et de la distribution angulaire de différents types de rayonnements corpusculaires et quantiques; mesures magnétiques et géodésiques: recherches sur les effets biologiques des rayons cosmiques.

Les sondes spatiales sont nécessaires pour permettre la réalisation des expériences proposées concernant le milieu interplanétaire, l'évolution des comètes, les effet du « vent » solaire et de la pression de radiation solaire sur les queues de comètes.

1.4.3 PROJETS A LONGUE ÉCHÉANCE (projets majeurs) :

Il est proposé de lancer des plateformes astronomiques stabilisées par rapport à des références sidérales ainsi que des satellites lunaires. Un grand nombre d'expériences susceptibles d'être incorporées dans les charges correspondantes a été proposé par différents groupes scientifiques.

1.5 CALENDRIER PROPOSÉ

L'activité de l'Organisation Européenne de Recherches Spatiales aboutirait à un certain nombre de tirs conformément au calendrier indiqué ci-dessous :

ANNÉES :	1	2	3	4	5	6	7	8
Projets à court terme								
Fusées sondes *	Probablement moins que 10	40	65	65	65	65	65	65
Projets à moyenne échéance								
Petits satellites en orbite proche autour de la Terre				4	6	4	4	4
Sondes spatiales						2	3	3
Projets à longue échéance								
Satellite astronomique stabilisé et satellite lunaire						2	1	1

* Equivalentes à la fusée de référence définie préalablement, capable d'emporter une charge de 50 kg à 150 km d'altitude.

CSE/CS(75)15
Annex

ANNEX

TELEX

FROM SIR HARRIE MASSEY, CHAIRMAN OF THE PROVISIONAL SPACE SCIENCE BOARD FOR EUROPE.

TO : THE PRESIDENT AND SECRETARY GENERAL OF THE COMMITTEE OF ALTERNATES OF THE EUROPEAN SPACE CONFERENCE,
MONSIEUR A. STENMANS, PRESIDENT AND MR. ROY GIBSON,
SECRETARY GENERAL,
C/O ESRO
114 AVENUE CHARLES DE GAULLE
92 NEUILLY SUR SEINE, PARIS, FRANCE

THE PROVISIONAL SPACE SCIENCE BOARD FOR EUROPE HAS PASSED THE FOLLOWING RESOLUTION BY CORRESPONDENCE WITHOUT DISSENT:

"THE PROVISIONAL SPACE SCIENCE ADVISORY BOARD FOR EUROPE WELCOMES THE INCLUSION IN THE DRAFT CONVENTION FOR THE EUROPEAN SPACE ADMINISTRATION OF PROVISION FOR A MANDATORY SCIENCE PROGRAMME.

IN THE OPINION OF THE BOARD SUCH A PROGRAMME CAN ONLY BE ADEQUATELY SAFEGUARDED BY AN EQUALLY MANDATORY SCIENCE PROGRAMME COMMITTEE AS THE DECISION-MAKING BODY UNDER THE COUNCIL ON MATTERS WHICH AFFECT THE SCIENCE PROGRAMME.

THE BOARD RESPECTFULLY REQUESTS THAT AN ARTICLE COMPLEMENTING THE MANDATORY SCIENCE PROGRAMME BY A MANDATORY COMMITTEE BE INCLUDED IN THE EUROPEAN SPACE ADMINISTRATION CONVENTION."

THOSE SUPPORTING THE RESOLUTION ARE:

PROFESSOR E AMALDI
PROFESSOR R L F BOYD
PROFESSOR H ELLIOT
DR C G FALTHAMMAR
PROFESSOR J GEISS
PROFESSOR N HERLOFSON
PROFESSOR C DE JAGER
PROFESSOR DR. R. LUST
PROFESSOR SIR HARRIE MASSEY
PROFESSOR G OCCHIALINI
DR B PETERS
PROFESSOR B STROMGREN
PROFESSOR DR P SWINGS
PROFESSOR DR H C VAN DE HULST

IT PROVED IMPOSSIBLE TO GET IN TOUCH WITH PROFESSOR J E BLAMONT.

10. Demand for a permanent Science Programme Committee in the Draft Convention of the European Space Agency : telex from Sir Harrie Massey, Chairman of the Provisional Space Science Board for Europe to the President and Secretary General of the Committee of Alternates of the European Space Conference. CSE/CS(75)15, Annex (HA/IUE ESC-817).

EUROPEAN SPACE CONFERENCE

COMMITTEE OF ALTERNATES

CSE/CS(75)WP/9

Neuilly, 9 February 1975

UK Proposal for Articles X and XII

ARTICLE X

ORGANS

The Agency shall comprise a Council, a Science Programme Committee and a Director General assisted by staff.

ARTICLE XII

THE SCIENCE PROGRAMME COMMITTEE

1. For the scientific programme undertaken in accordance with Article V.1(b), a Committee shall be established, composed of representatives of the Member States. Subject to the provisions of Article XI.6(b), each Member State shall have one vote in this Committee. The Committee shall be chaired by the Council Chairman or by a Council delegate designated by him.

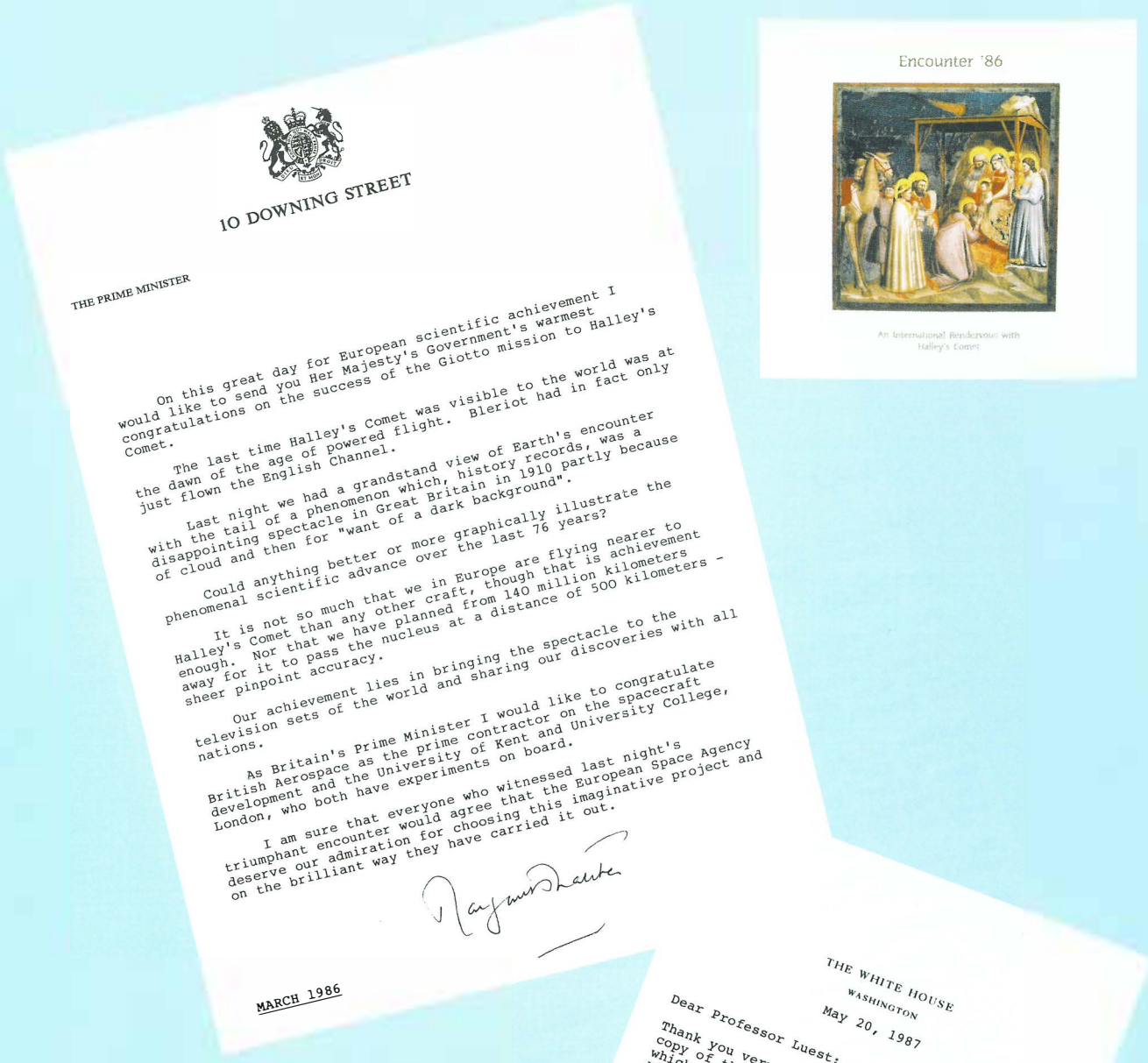
2. Subject to the provisions of this Convention and, in particular, of Article XI.5, the Committee shall be the decision making body on matters which affect the Science Programme; in respect of matters which fall under the responsibility of the Council, the Committee shall act as an advisory body to the Council, to which it shall address its recommendations.

3. The Committee may establish such advisory bodies as it considers necessary for the proper execution of its programme..

OTHER ARTICLES

There would be consequential amendments in other articles such as XI, XIII and XV, and in Annex II.

10 bis. United Kingdom Proposal for Article X (Organs) and XII (The Science Programme Committee). European Space Conference, Committee of Alternates. CSE/CS(75)WP/9 (HA/IUE ESC-817).



10 DOWNING STREET

THE PRIME MINISTER

On this great day for European scientific achievement I would like to send you Her Majesty's Government's warmest congratulations on the success of the Giotto mission to Halley's Comet.

The last time Halley's Comet was visible to the world was at the dawn of the age of powered flight. Bleriot had in fact only just flown the English Channel.

Last night we had a grandstand view of Earth's encounter with the tail of a phenomenon which, history records, was a disappointing spectacle in Great Britain in 1910 partly because of cloud and then for "want of a dark background".

Could anything better or more graphically illustrate the phenomenal scientific advance over the last 76 years?

It is not so much that we in Europe are flying nearer to Halley's Comet than any other craft, though that is achievement enough. Nor that we have planned from 140 million kilometers away for it to pass the nucleus at a distance of 500 kilometers - sheer pinpoint accuracy.

Our achievement lies in bringing the spectacle to the television sets of the world and sharing our discoveries with all nations.

As Britain's Prime Minister I would like to congratulate British Aerospace as the prime contractor on the spacecraft development and the University of Kent and University College, London, who both have experiments on board.

I am sure that everyone who witnessed last night's triumphant encounter would agree that the European Space Agency deserve our admiration for choosing this imaginative project and on the brilliant way they have carried it out.

MARCH 1986

Encounter '86

An International Rendezvous with Halley's Comet

THE WHITE HOUSE
WASHINGTON

May 20, 1987

Dear Professor Luest:

Thank you very much for remembering me with a copy of the limited edition of Encounter '86, which I received through James Fletcher of the National Aeronautics and Space Administration. This handsome publication, documenting the European Space Agency's successful encounters with Halley's Comet, is a valued addition to my library. I am truly grateful to you and your associates for the international goodwill that prompted your special gesture.

With my best wishes to you and your colleagues,

Sincerely,

Ronald Reagan

Professor Reimar Luest
Director General
European Space Agency
8-10 rue Mario-Nikis
75738 Paris Cedex 15
France

11. Encounter of ESA's Giotto spacecraft with Halley's Comet.
Message of congratulations from Prime Minister Margaret Thatcher to the European Space Agency, in March 1986.
Encounter '86 - An International Rendezvous with Halley's Comet (ESA Brochure BR-27, November 1986).
Letter of thanks from President Ronald Reagan to Prof. Reimar Lüst, 20 May 1987.

esa

european space agency
agence spatiale européenne

D.Sci/RMB/ga/1583 Paris, 6th February 1985

To : Wide Scientific Community

Dear Colleagues,

The Council of ESA met at ministerial level on 30th and 31st January in Rome. This meeting provided the opportunity for the Ministers to redefine the objectives of the European Space Agency for the next decade and beyond. Important decisions on the preparation of the Columbus and Ariane 5 programmes were taken and a positive attitude was observed on Hermes. At the same time, the Council approved the objectives proposed by the Director General of ESA in the areas of telecommunications, meteorology, earth sciences and observations, and microgravity.

In addition, the Ministers decided, for the first time since 1971, to increase the level of the mandatory scientific programme from its present value of 126.8 MAU at 1984 economic conditions to 162 MAU to be reached through regular increments of 5%. This net progression of more than 25% is a recognition of the inadequacy of the present level of resources with respect to the evolution of European space science since 1971. It is the first step towards the implementation of our long term programme, described in Horizon 2000, and allows us to start this implementation without delay.

This positive decision is a direct consequence of your efforts in defining and promoting the long term programme. It must be recognised that this decision represents an important effort for several Member States. It is also true to say that the new level of the scientific programme is still modest compared, for example, to that of the United States. This forces us to manage our long term programme in a rigorous manner.

The successful outcome of the Conference would probably not have been possible without the existence of the programme as described in Horizon 2000, nor without your efforts of persuasion with your authorities at national level. May I express here my sincere congratulations on the success of these efforts, to which I would also like to add my thanks for your enthusiastic contributions to this common endeavour.

Yours sincerely,

R.M. Bonnet

8-10, rue Mario-Nikis · 75738 Paris Cedex 15 · Tél. (33.1) 273.76.54 · Telex ESA 202746 · Télégr. Spaceurop Paris

12. Message from Roger Bonnet, Director of Science, to the Wide Scientific Community, dealing with the Ministerial Council held in Rome on 30-32 January 1985, dated 6 February 1985.

13. Europa-II ready for launch at the Guiana Space Centre. Inset: First launch on 5 November 1971.

0 SUMMARY OF THE MAIN CONCLUSIONS

The EUROPA II project bears the mark of the historical and political circumstances that have attended its implementation and resulted in a highly unintegrated design consisting of stages built nationally and practically independently of one another. Such starting conditions constitute a handicap, but not one that cannot be overcome. An efficient management wielding real authority would have allowed the consequences to be attenuated, and EUROPA II to be transformed into a launch vehicle satisfying the objectives set. A complete analysis of the organisational problems was beyond the scope of the Commission and it is difficult to identify clearly the reasons why the project did not develop satisfactorily. It can nevertheless be stated that the following circumstances played a preponderant part :

- resorting to national agencies for placing contracts led to the Secretariat's technical authority being effaced in cases where these agencies were powerful, or to constant confusion about the respective responsibilities of the Secretariat and the agency in cases where they were not;

- the internal organisation of the Secretariat was inefficient and responsibilities were not clearly defined. This did not help to assert its technical authority;

- the poor organisation and lack of sense of responsibility of certain firms dangerously amplified the consequences of the Secretariat's weakness;

- the necessary authority was not given to the ELDO Secretariat for carrying out its task;

- pressures exerted on ELDO by the Member States did nothing to improve this state of affairs, with political problems frequently taking precedence over the technical problems and cost-effectiveness of the project.

As a result the Secretariat has been unable to fulfil what ought to have been its proper role of technical body piloting the programme, taking charge of vehicle integration and genuinely acting as coordinator of the firms.

- 2 -

The lack of efficient management at the highest level together with the remoteness of the ELDO technical staff (at all levels) from actual design and development work, had repercussions on the worth of the technical specifications and quality of integration. It brought about a result that was disappointing but inevitable : despite a tremendous amount of work carried out and an indisputable technical harvest, the vehicle in its current configuration is unflightworthy. All these reasons had also contributed to an abnormally high cost level of the EUROPA II project.

The technical status of the overall project may be summed up as follows :

- at the level of basic studies, besides an obvious lack of homogeneity in default of a true Project Definition, there may be noted certain gaps and a lack of cross-checking of studies against ground test results. However the scope of this remark is mitigated by the fact that the flight testing programme allowed a satisfactory experimental confidence level to be achieved in most areas. Only a few particular points, mainly relative to the passage from the EUROPA I to the EUROPA II configuration, necessitate further study before F12 (second and third stage control stability, and pogo effect, especially on first and third stages),

- at the level of design, the absence of precise specifications results in a lack of homogeneity between stages, a relatively minor matter, but also :

  - in the use, partly by necessity, of complicated solutions in the design of the 3rd stage,

  - in serious design errors in the integration of the 3rd stage guidance and telemetry systems,

  - in minor deficiencies in the 4th stage.

The 3rd stage wiring should in particular be drastically overhauled. Rules of sound practice guaranteeing satisfactory on-board electromagnetic compatibility should be strictly applied. The sensitivity of the guidance system and sequencer to external interference must be greatly reduced. Thereafter complete trials must be held to prove the overall electromagnetic compatibility of the systems mounted in the 3rd stage. The 4th stage wiring should also be reviewed and improved. The customary rules for bonding and earthing should also be applied in the fairings .

- 3 -

- at the level of qualification, three major 3rd stage systems cannot be considered qualified and require further testing before qualification : the sequencer, the separation system for the middle skirt, and the guidance computer;

- at the level of manufacture, the situation is on the whole satisfactory except in the case of the guidance computer which has undergone prototype production only and cannot be considered flightworthy in its current form, and relatively minor problems concerning the 4th stage motor and wiring;

- at the level of integration, rigorous methods were lacking and must be introduced to ensure valid overall integration of the on-board electrical systems of the 3rd stage;

- at the level of interfaces, accurate documentation should be compiled and subjected to strict configuration control;

- at the level of operations, the emphasis is to be laid on checks in overall vehicle configuration rather than checks of individual stages.

Therefore, in order to ensure satisfactory reliability for the EUROPA II vehicle, a number of conditions must be fulfilled

14. ELDO's demise - Final Report of the Project Review Commission, 19 May 1972: Summary of main conclusions. ELDO/C(72)18 (HA/IUE ELDO-1565).

IV - Availability of launchers

1. I understood that the United States maintaining its earli position, was not able to commit itself to make conventional launchers available to Europe without other than commercial conditions, this position covering both launchers purchased by Europe for launching from American territory or elsewhere and also the construction of launchers in Europe under American licence.

I noted, however, that the United States would be prepared - during the period preceding the entry into force of the INTELSAT Agreements - to resort to a "pre-interim" procedure under which it would be able, in the short term, to make a firm launch commitment limited to those European projects that are currently identified and defined - including a possible operational system of European communication satellites.

I also understood that, from the moment of entry into force of the agreement instituting the definitive INTELSAT system, the United States would interpret Article XIV of the existing draft agreement as meaning that a European project coming within the scope of this article would have to receive a positive recommendation from the Assembly by a two-thirds majority.

I also understood that, when the post-Apollo system becomes operational, the conditions set at the present time will continue to be applied to all launchings carried out from United States territory, but that the United States recognises European freedom to use the system from European ranges.

2. I wish to confirm so far as may be necessary that Europe does not intend to go back on its international commitments. But you should understand our concern to guarantee ourselves against the inevitable and unforseeable contingencies involved in the procedure of Article XIV. Such guarantee is needed to establish and implement our projects in the framework of our medium and long term programmes.

The attitude you have adopted means whenever we need American help in launching a satellite we shall have to comply with the condition that the launching must be favourably viewed by INTELSAT or, failing this, must be agreed by the US Government after examination on a case-by-case basis.

The new interpretation you have given to Article XIV of the draft INTELSAT agreement - an interpretation which, to the best of my knowledge is confirmed neither by the joint preparatory work nor by the wording used in the texts - makes this condition considerably more stringent.

The fact that in the event of an adverse recommendation by INTELSAT - addressed to the Member States who are the authors of a regional project and to be assessed by them under their own international responsibility - you introduce furthermore a clause which gives you a final decision power, obviously creates an additional factor of uncertainty. This is all the more serious in that subsequent amendments to the text of this agreement - even imposed against the will of the European countries - might some day introduce even stricter rules of incompatibility.

The procedure that you have suggested for the pre-interim period would make it possible to provide us, in the short term, with the certainty we seek - but only in respect of those projects that are at present identified and defined. This certainty will not exist in the event of our present projects undergoing modifications, nor in the case of new projects being envisaged after the entry into force of the definitive INTELSAT agreements. In both these cases, not only might objections be raised that went beyong the framework of our international obligations such as we understand them and have subscribed to them, but procedural delays might occur that would imperil the major preparatory investments implied by space application programmes.

Under the post-Apollo system itself, the solution which you propose would only give us freedom to use American equipment for launchings from our own ranges. This would impose an excessive financial burden on us.

3. To sum up, we are obliged to note that, although the present state of the discussions offers some prospect of our launching our immediate projects within the framework of our collaboration in the post-Apollo programme, it does not enable us to embark on any medium or long-term programming of our space activities.

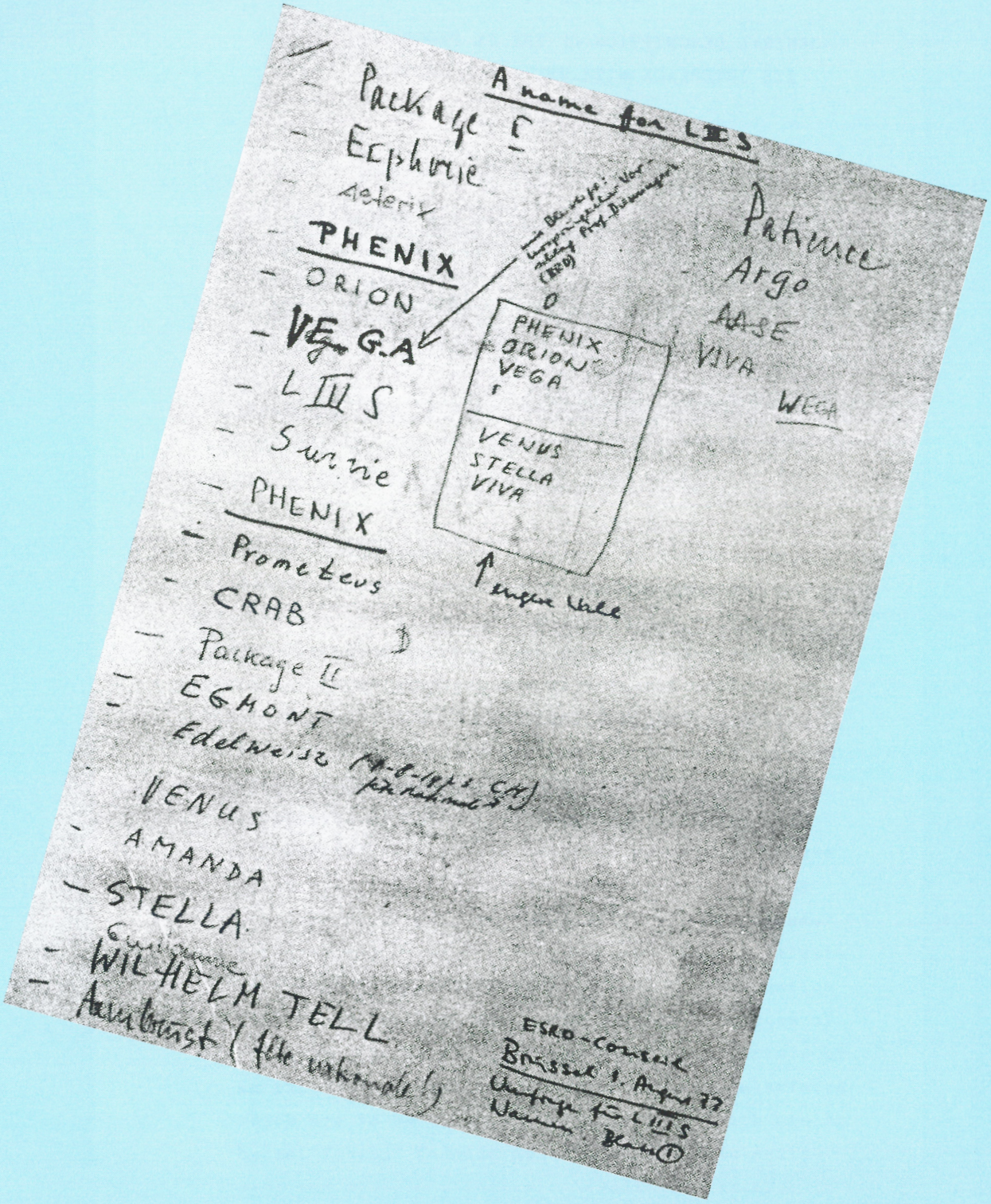
C. - As I stated at the end of our talks, the governments of the Member countries of the ESC will have to takea decision during the next few weeks on the question of European collective participation in the post-Apollo programme. It is in the interest of both parties that this decision should not be further postponed. You yourself want thispoint to be settled quickly, we, for our part, cannot put off any longer our decisions ona European space programme.

I hope very sincerely that your reply will be of such a nature as to allay the anxieties and doubts to which the outcome of our recent discussions gave rise within the European delegation.

Allow me in conclusion to thank you, on my own behalf and that of all my colleagues of the European delegation for the warmth of your welcome and for the complete frankness with which you stated your position to us.

Yours very truly,
Th. LEFEVRE

15. Collaboration with NASA on the Post-Apollo Programme. Extract from a letter from Minister Th. Lefèvre to Mr A. Johnson, US Under Secretary of State, 3 March 1971. CSE/Comité Ad Hoc(71)12, 22 April 1971 (HA/IUE ESC-6449).



16. The search for a name for the new European launcher. Paper circulated by Mr André Lebeau at the ESRO Council meeting on 1 August 1973 (from 'Ariane - The Road to Independence', ESA SP-1060, p. 32).

ARTICLE II

GENERAL DESCRIPTION OF THE SL PROGRAMME,
ITS INTERFACE WITH THE SPACE SHUTTLE,
AND ITS USES

1. Summary description of the SL programme

The SL programme provides for the definition, design and development of mannable laboratory modules and unpressurised instrument platforms (pallets) suitable for accommodating instrumentation for conducting research and applications activities on Shuttle sortie missions. The SL module and SL pallet will be transported, either separately or together to and from orbit in the Shuttle payload bay and will be attached to and supported by the Shuttle orbiter throughout the mission. The module will be characterised by a pressurised environment (permitting the crew to work in shirt sleeves), a versatile capability for accommodating laboratory and observatory equipment at minimum cost to users, and rapid access for users. The pallet, supporting telescopes, antennae and other instruments and equipments requiring direct space exposure, will normally be attached to the module with its experiments remotely operated from the module, but can also be attached directly to the Shuttle orbiter and operated from the orbiter cabin or the ground. Both the module and the pallet will assure minimum interference with Shuttle orbiter ground turnaround operations.

17. Memorandum of Understanding between NASA and ESRO for a Cooperative Programme concerning the development, procurement and use of a space laboratory in conjunction with the Space Shuttle system, signed on 14 August 1973 (ESRO/C(73)45, rev. 1; see also HA/IUE ESRO 3780 and 7073).

2. Interface with Shuttle

The Shuttle will : serve in missions to deliver payloads to earth orbit; maintain station on orbit for mission durations in the order of seven days or more; provide safety monitoring and control over payload elements throughout the missions; and provide seating and complete habitability for crews, including free movement between the SL module and the Shuttle. In the interest of minimising developmental and operational costs, and maximising reliability, an effort will be made to optimise commonality between SL and Shuttle components.

3. Use objectives

The SL will support a wide spectrum of missions for peaceful purposes and will accept readily the addition of special equipment for particular mission requirements. The SL will facilitate maximum user involvement and accessibility. The flight equipment complement will be capable of augmentation as appropriate to satisfy approved programme needs. It will be possible for users to utilise the SL with or without supplementary equipment for a single experiment or, in the alternative, to utilise only a small portion of the SL in combination with other experiments. The standard resources of the SL may be utilised to any degree appropriate by an experimenter adhering to standardised interfaces which are to be defined and procedures which are to be set forth. Considerable flexibility in equipment and mission structuring shall be available to the user for effective mission operation.

REGISTRY

EUROPEAN SPACE CONFERENCE

POST APOLLO SUBCOMMITTEE

CSE/CS/Post-Apollo(72)WP/7 Neuilly, 15 July 1972

Annex : 1

19th Status Report on the U.S. Post Apollo Programme

The Transfer of Technology Issue

Edward Cole, President of General Motors Corporation:

"America's technological advantage over advanced nations such as Japan and those of Western Europe has been trimmed substantially--in some fields eliminated. With the ready availability of new technology to all other nations, it is difficult to foresee the possibility of American industry reestablishing any appreciable technological gap in the years ahead. Also, the productivity growth of leading overseas competitors in recent years has been higher than that of U.S. manufacturers."

Prof. B. Fox, Harvard Business School:

"We started with the Marshall Plan and its goal of rehabilitating production output throughout the world; and it's gone on ever since. We have many, many programs where the export of a particular kind of technological knowledge--in my field, any number of management training programs all over the world--has been a major factor in a very rapid rate of growth in another nation or area."

William Magruder, Special Assistant to President Nixon:

"The Europeans recognize we have the better technological base; that's the only thing left that they don't have. They do have the resources; they do have the economic health. They do smart enough to join their resources, not worry about anti-trust laws, not worry about the export-import rules that we play by, and then buy from us, not just our technology, but our management, our tooling, our preliminary designs, our testing, and our marketing expertise, that means to me the disappearance of an industry. It has happened in shipping, and it has happened in many other industries.

.../...

C/375

18. Objections in the USA to the technology transfer to Europe: 19th Status Report on the US Post Apollo Programme. CSE/CS/Post-Apollo(72)WP/7, 15 July 1972 (HA/IUE ESC-1187).

"Good healthy competition from abroad, played by the same rules never scared an American in his life. But we don't have that situation today, and we had better recognize it and rectify it, and take the Europeans on.

"With respect to our international position, in steel production the U.S. has gone from 47% of world production to 20% in the last 20 years. Nine out of every 10 home radios are made abroad. Half of our shoes are made outside of the U.S. Some 95% of our motorcycles are imported; 90% of our baseball gloves; 76% of our tennis rackets. The AFL-CIO has estimated that 700,000 U.S. jobs have been lost to this kind of competition in the past four years. The electronics industry estimates 50,000 job lost; the footwear industry estimates 175,000 jobs will be lost by 1975. The textile industry saw 250,000 jobs lost in 1969 alone.

"The recent agreements between Boeing and Aeritalia on STOL aircraft design and production amount to a total export of a technology to another country--Boeing gets some financing, the Italians get an industry. General Electric and the French will build the next major engine; of the work to be done, 35% here, 65% there. Japan is negotiating with American companies to build a wide-bodied jet in Japan. In effect, our technology will be putting three other countries in competition with us."

Dr. M. Cetron, President of Forcasting International Ltd., in a NASA funded study on "transfer of technology concerning commercial aviation":

"A study of the U.S. technological position shows that the U.S. has been importing technology.

"Evaluation of the U.S. position in world aviation with regard to the need for government support contrasts strongly with foreign trends. If current trends continue, the U.S. will lose out in the medium and short haul aircraft market due to outright subsidies of foreign industry and a decrease in technology transfer from the military sector within the U.S.

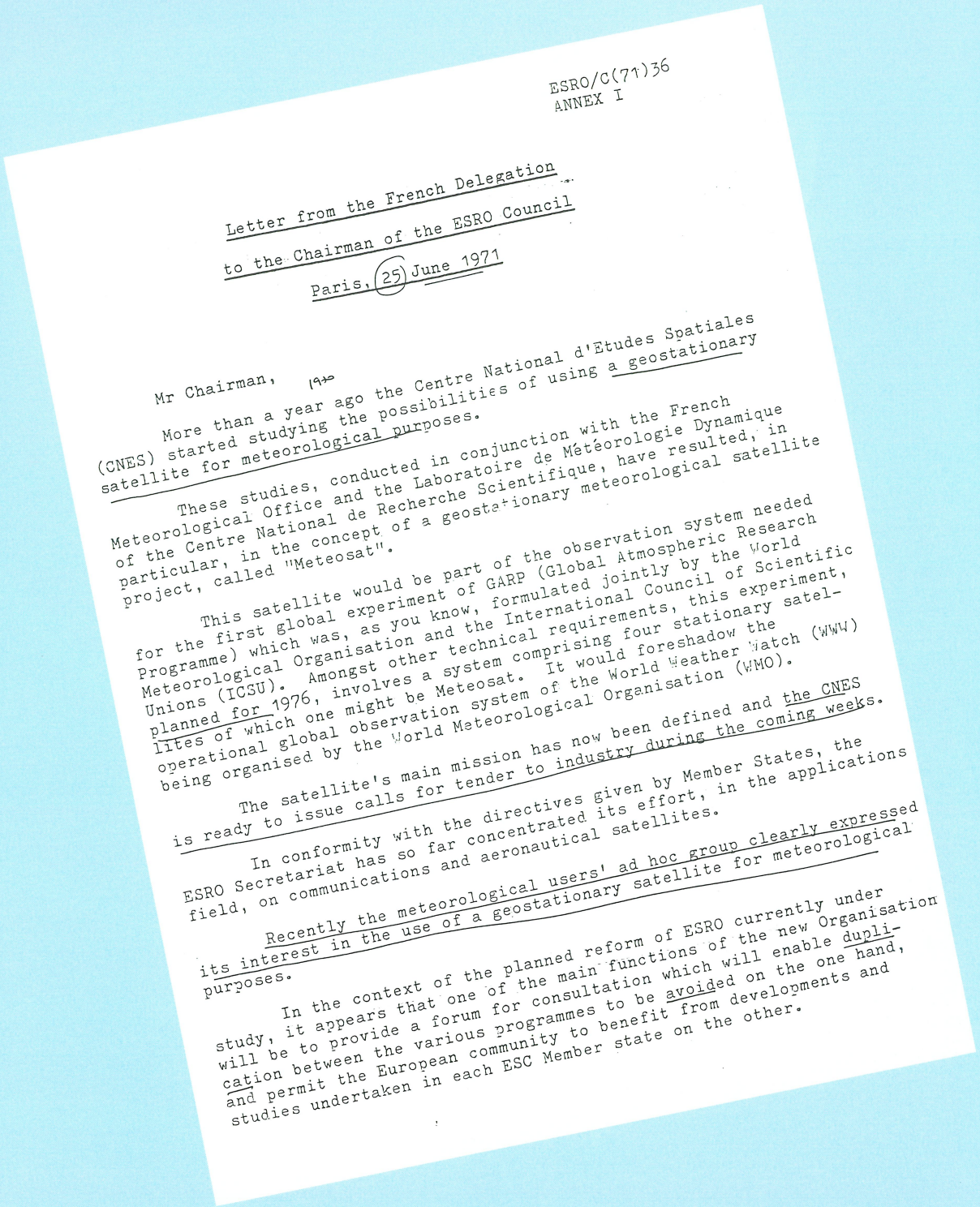
"The favorable European position is not due to infusions of American technology. The American position has probably been more favorably affected than the European by any exchange due to a greater ability to apply technology."

General News

NASA has decided on a new term "Sortie Lab" (in analogy to Skylab) which is replacing the terms Sortie Can and Sortie Module. All NASA contractors have to use the new term effective immediately.

.../...

19. The text of the ESA Convention was approved by the Conference of Plenipotentiaries held in Paris on 30 May 1975. ESA functioned de facto from 31 May 1975. The ESA Convention entered into force on 30 October 1980.



ESRO/C(71)36
ANNEX I

Letter from the French Delegation
to the Chairman of the ESRO Council
Paris, 25 June 1971

Mr Chairman,

More than a year ago the Centre National d'Etudes Spatiales (CNES) started studying the possibilities of using a geostationary satellite for meteorological purposes.

These studies, conducted in conjunction with the French Meteorological Office and the Laboratoire de Météorologie Dynamique of the Centre National de Recherche Scientifique, have resulted, in particular, in the concept of a geostationary meteorological satellite project, called "Meteosat".

This satellite would be part of the observation system needed for the first global experiment of GARP (Global Atmospheric Research Programme) which was, as you know, formulated jointly by the World Meteorological Organisation and the International Council of Scientific Unions (ICSU). Amongst other technical requirements, this experiment, planned for 1976, involves a system comprising four stationary satellites of which one might be Meteosat. It would foreshadow the operational global observation system of the World Weather Watch (WWW) being organised by the World Meteorological Organisation (WMO).

The satellite's main mission has now been defined and the CNES is ready to issue calls for tender to industry during the coming weeks.

In conformity with the directives given by Member States, the ESRO Secretariat has so far concentrated its effort, in the applications field, on communications and aeronautical satellites.

Recently the meteorological users' ad hoc group clearly expressed its interest in the use of a geostationary satellite for meteorological purposes.

In the context of the planned reform of ESRO currently under study, it appears that one of the main functions of the new Organisation will be to provide a forum for consultation which will enable duplication between the various programmes to be avoided on the one hand, and permit the European community to benefit from developments and studies undertaken in each ESC Member state on the other.

20. Letter from the French Delegation to the Chairman of the ESRO Council, 25 June 1971, proposing the Europeanisation of Meteosat. ESRO/C(71)36, Annex I (HA/IUE ESRO-578).

ESRO/C(71)36
ANNEX I
page 2

With this in mind the French Delegation would like to propose that ESRO Member States cooperate in the Meteosat project under Article VIII of the present Convention, thus enabling the entire European community to benefit from the results of the studies undertaken in France. The Meteosat project would thus become an ESRO programme on the basis of a procedure and system of relationships between the Organisation and the national agency concerned that might well serve as a model for other projects.

I enclose a detailed description of the Meteosat project together with a note describing the conditions under which the "Europeanisation" of this project might be effected.

Broadly speaking, and in line with the conditions you yourself set out in your "aide-mémoire with a view to the negotiations", the missions to be undertaken under applications programmes should be determined in close cooperation with users, the main role of the ESRO Directorate of Programmes and Planning being to translate the requirements expressed into space terms: satellite definition, sensors, etc. We consider this procedure to be fully realistic and the French Delegation has already had the opportunity of signifying its complete agreement on this point.

In the case of Meteosat the mission has already been defined and it would not therefore be necessary to take up again at ESRO level studies that have already been carried out, it being understood that any modifications or adaptations may be made to the project that are deemed useful and in keeping with its objectives.

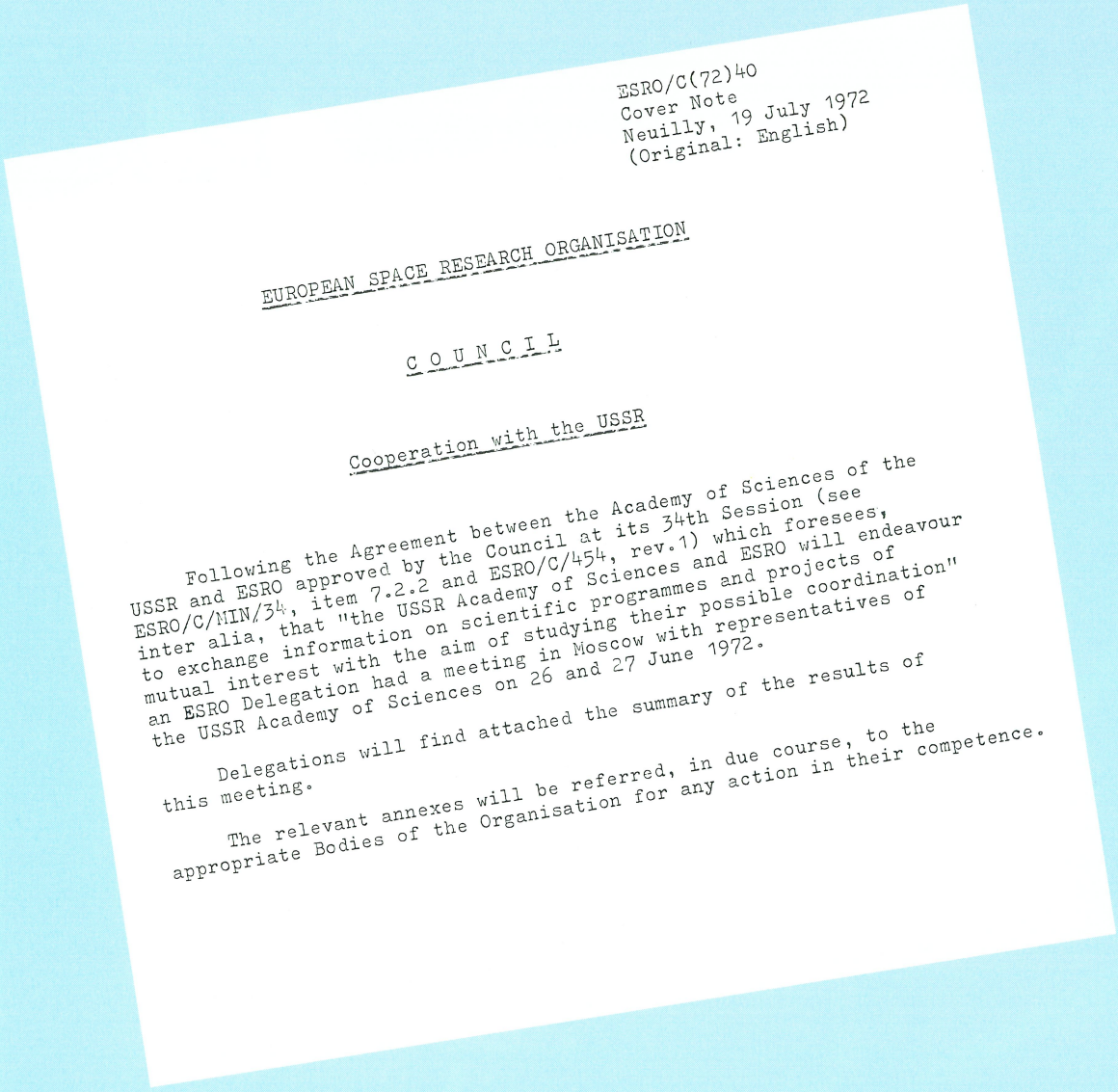
The Meteosat programme is currently under discussion with NASA with a view to the conclusion of a cooperation agreement. It is plain that if European countries as a whole joined in the programme, any such cooperation agreement would be between ESRO and NASA and this possibility has in fact been envisaged in the discussions.

I would be very grateful if you would be good enough to forward this proposal to the ESRO Member States so that the next Council meeting can take it into account when discussing the future European space programme.

I shall be glad to furnish you with any additional information you may require and ask you to believe, Mr Chairman, in the assurance of my highest consideration.

G. de BOISGELIN

20bis. Intergovernmental Conference on an operational Meteosat system, at ESA Headquarters in March 1983.



ESRO/C(72)40
Cover Note
Neuilly, 19 July 1972
(Original: English)

EUROPEAN SPACE RESEARCH ORGANISATION

C O U N C I L

Cooperation with the USSR

Following the Agreement between the Academy of Sciences of the USSR and ESRO approved by the Council at its 34th Session (see ESRO/C/MIN/34, item 7.2.2 and ESRO/C/454, rev.1) which foresees, inter alia, that "the USSR Academy of Sciences and ESRO will endeavour to exchange information on scientific programmes and projects of mutual interest with the aim of studying their possible coordination" an ESRO Delegation had a meeting in Moscow with representatives of the USSR Academy of Sciences on 26 and 27 June 1972.

Delegations will find attached the summary of the results of this meeting.

The relevant annexes will be referred, in due course, to the appropriate Bodies of the Organisation for any action in their competence.

21. Cooperation with the USSR, ESRO/C(72)40, 19 July 1972 (HA/IUE ESRO-649). Cover Note: Summary of the Results of a Meeting between Delegations of the Academy of Sciences of USSR and ESRO, Moscow, 26-27 June 1972, signed by B. Petrov (Academy of Sciences) and J.A. Dinkespiler (ESRO).

ESRO/C(72)40
Att. Annexes I - IX

Summary of the results of the Meeting between Delegations of the Academy of Sciences of USSR and the European Space Research Organisation (ESRO)

Moscow 26 - 27 June 1972

In pursuance of the agreement reached during the meeting between the Delegations of the USSR Academy of Sciences and the European Space Research Organisation which took place in Neuilly on 19 October 1971 the two Delegations met again on invitation of the Academy of Sciences in Moscow on 26-27 June 1972. The list of participants is contained in Annex IX.

The discussions covered several sectors of cooperation identified during the previous meeting. These were:

1. Magnetospheric - ionospheric studies,

2. Earth Resources,

3. Telecommunications and meteorology.

Besides those the possibilities of a cooperation between the telemetry data acquisition ground networks was discussed.

The more detailed account of discussions on the above items is given in the annexes attached (Annexes I - VIII).

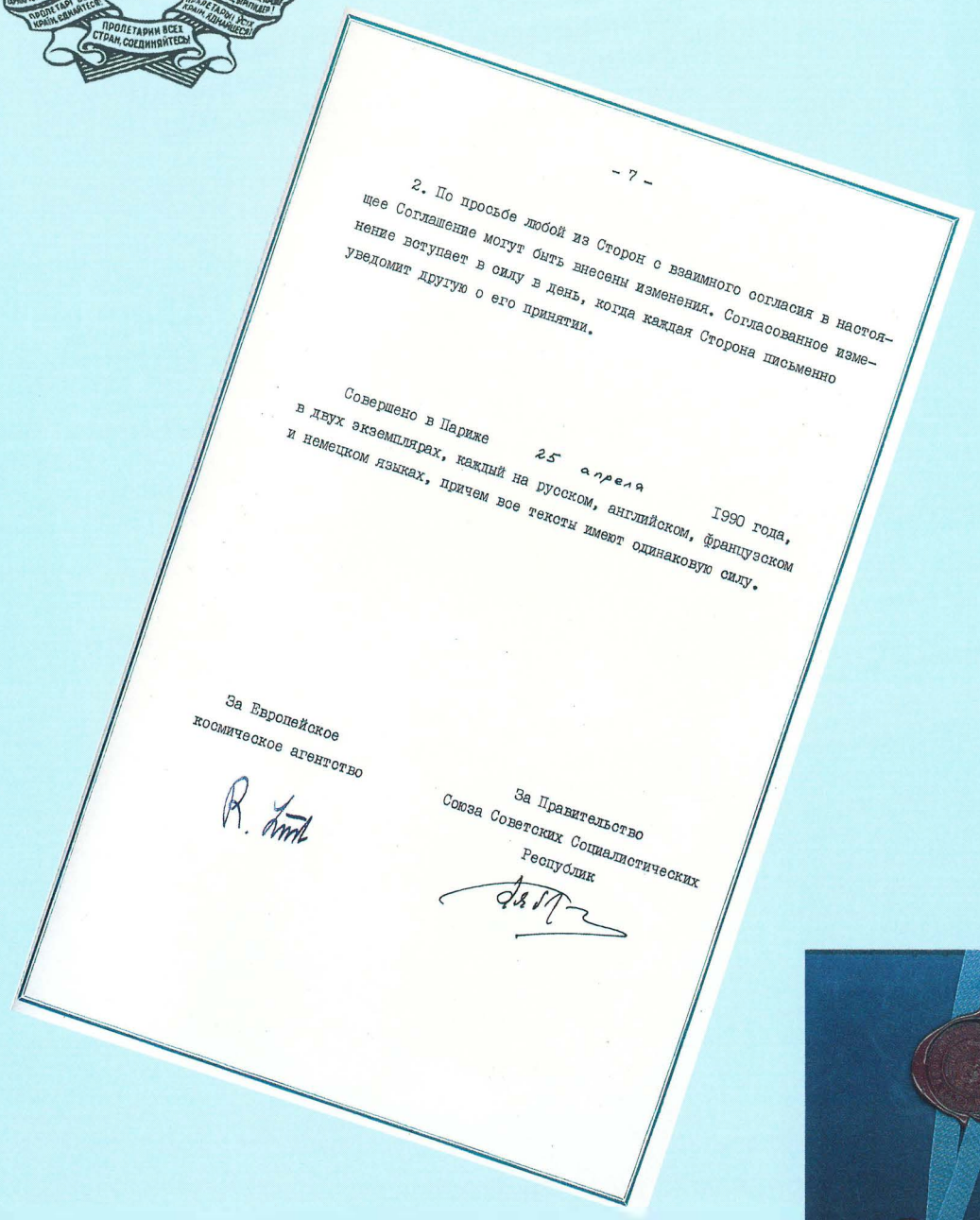
Some of the proposals discussed require further consideration and discussion by correspondance and/or meetings of specialists.

The specific proposals contained in the annexes will be submitted in due course for approval to the Academy of Sciences of the USSR and the ESRO Council.

ESRO will be the host of the next meeting of the Delegations of the Academy of Sciences and ESRO which will take place at a time to be agreed by correspondance.

Signed for Academy of Sciences
B.N. PETROV

Signed for ESRO
J.A. DINKESPILER



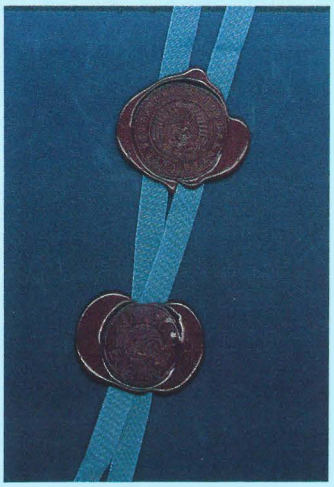
- 7 -

2. По просьбе любой из Сторон с взаимного согласия в настоящее Соглашение могут быть внесены изменения. Согласованное изменение вступает в силу в день, когда каждая Сторона письменно уведомит другую о его принятии.

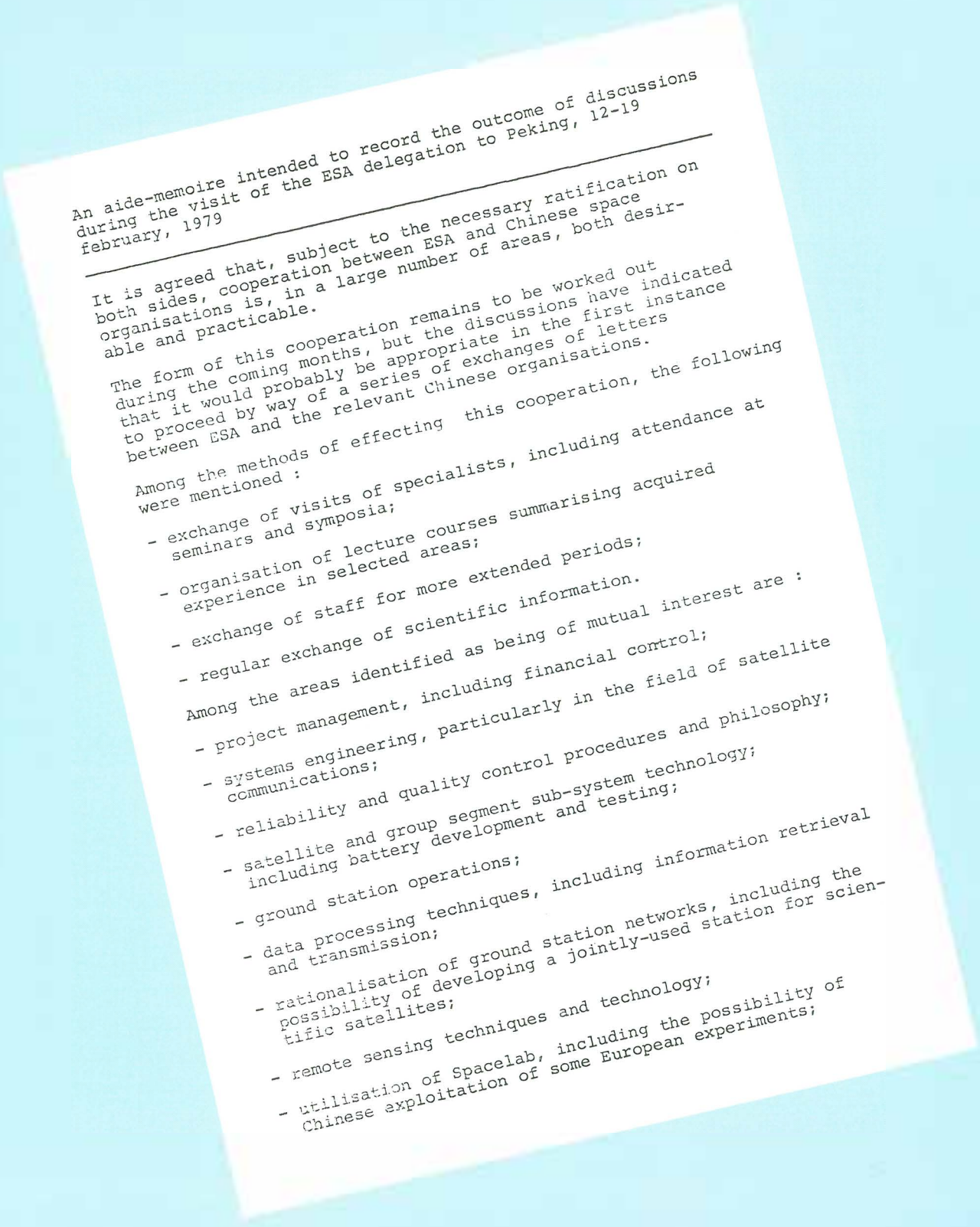
Совершено в Париже 25 апреля 1990 года, в двух экземплярах, каждый на русском, английском, французском и немецком языках, причем все тексты имеют одинаковую силу.

За Европейское космическое агентство

За Правительство Союза Советских Социалистических Республик



21 bis. Agreement between ESA and the Government of the USSR concerning cooperation in the field of exploration and uses of outer space for peaceful purposes, signed in Paris on 25 April 1990 Prof. Reimar Lüst (ESA) and Ambassador I. Riabov (USSR).



An aide-memoire intended to record the outcome of discussions during the visit of the ESA delegation to Peking, 12-19 february, 1979

It is agreed that, subject to the necessary ratification on both sides, cooperation between ESA and Chinese space organisations is, in a large number of areas, both desirable and practicable.

The form of this cooperation remains to be worked out during the coming months, but the discussions have indicated that it would probably be appropriate in the first instance to proceed by way of a series of exchanges of letters between ESA and the relevant Chinese organisations.

Among the methods of effecting this cooperation, the following were mentioned :

- exchange of visits of specialists, including attendance at seminars and symposia;
- organisation of lecture courses summarising acquired experience in selected areas;
- exchange of staff for more extended periods;
- regular exchange of scientific information.

Among the areas identified as being of mutual interest are :

- project management, including financial control;
- systems engineering, particularly in the field of satellite communications;
- reliability and quality control procedures and philosophy;
- satellite and group segment sub-system technology; including battery development and testing;
- ground station operations;
- data processing techniques, including information retrieval and transmission;
- rationalisation of ground station networks, including the possibility of developing a jointly-used station for scientific satellites;
- remote sensing techniques and technology;
- utilisation of Spacelab, including the possibility of Chinese exploitation of some European experiments;

22. Cooperation with China. Aide Mémoire intended to record the outcome of discussions during a visit by an ESA Delegation to Peking, on 12-19 February 1979. ESA/C(79)56 (HA/IUE ESA-581).

- space science, including space physics, astronomy and cosmic physics;
- familiarisation with Ariane/satellite interfaces and launch operations.

Since the finalisation of the letters to be exchanged will require some time, including consultation with the competent authorities, ESA is in the meantime prepared straightaway.

- to furnish a directory of European industry's space capabilities;
- to receive a visit from Chinese experts at ESOC, Darmstadt, to see the facilities, specifically the Meteosat facility;
- to receive a visit from Chinese specialists interested in having detailed information regarding Spacelab utilisation;
- to arrange for Chinese experts to visit ESRIN to see the operation of ESA's Information Retrieval Service and EARTHNET, the European earth resources information dissemination and archiving centre;
- to arrange for the same or other Chinese specialists to become acquainted with the OTS experiments now being conducted at Fucino and elsewhere;
- to arrange for a visit to the Kourou launch sites;
- to arrange for a visit to China of two or three persons to give a series of lectures on spacecraft check-out and environmental testing techniques.

The ESA Director General agrees to consult his authorities and in due course to send to the Chinese Electronics Society, the Chinese Astronautics Society and the Space Science Technology Centre of Chinese Academy of Sciences, a draft of the exchange of letters, for their consideration. The aim should be to conclude the exchanges by the end of June 1979.

MINUTE

25 FEV. 1971

INT/I-20/DRK/LC/2097

Dear Professor Sarabhai,

I refer to our negotiations concerning cooperation between the Indian Space Research Organisation (hereinafter called "ISRO") and the European Space Research Organisation (hereinafter called "ESRO").

I propose that we base such cooperation on the following terms :

1. ISRO and ESRO agree to organise bilateral assistance and in particular to exchange scientific and technical information of mutual interest about space science and technology, space experiments and space applications, and also to award fellowships to promote this cause.

2. Each organisation will forward its technical and scientific reports to the other as soon as they are issued. They will also exchange relevant general information on their scientific and technological work and on the results obtained.

3. Subject to special agreements to be concluded on each occasion and which will define, among other matters, the financial conditions, each organisation will do its best, on request from the other party, to track satellites belonging to the other party with its existing facilities.

.../

Professor Vikram A. Sarabhai
Chairman
Indian Space Research Organisation
Navrangpura
AHMEDABAD - 9
India

23. Cooperation with India. Minute of a letter from H. Bondi (Director General of ESRO) to Prof. Vikram A. Sarabahi (Chairman of the Indian Space Research Organisation), dated 25 February 1971.

MINUTE

Subject to the observance of each organisation's rules concerning scientific and technical information, and in particular of any intellectual property right of the organisation, its scientists or contractors, scientific and technological information derived from data telemetered during such tracking operations will be made available to the parties.

4. Each organisation will nominate a representative for the coordination and execution of the above arrangements.

5. Except if provided otherwise in the agreements referred to in point 3, the above-mentioned reciprocal services will be performed without exchange of funds.

6. This agreement will remain valid for a period of three years, and will be automatically extended for further one-year periods unless one year's notice of termination is given by either party.

If ISRO is agreeable to the above terms, we propose that this letter and your answer thereto in the affirmative will constitute an agreement between ISRO and ESRO and mark the beginning of our collaborative efforts in space research and its applications. I propose that the date of your reply letter shall constitute the date of the entry into force of this agreement.

I have the honour to be,
Sir,
Your Obedient Servant

H. BONDI
Director General

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(name)
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APPROVED BY
ASST. DIR.:
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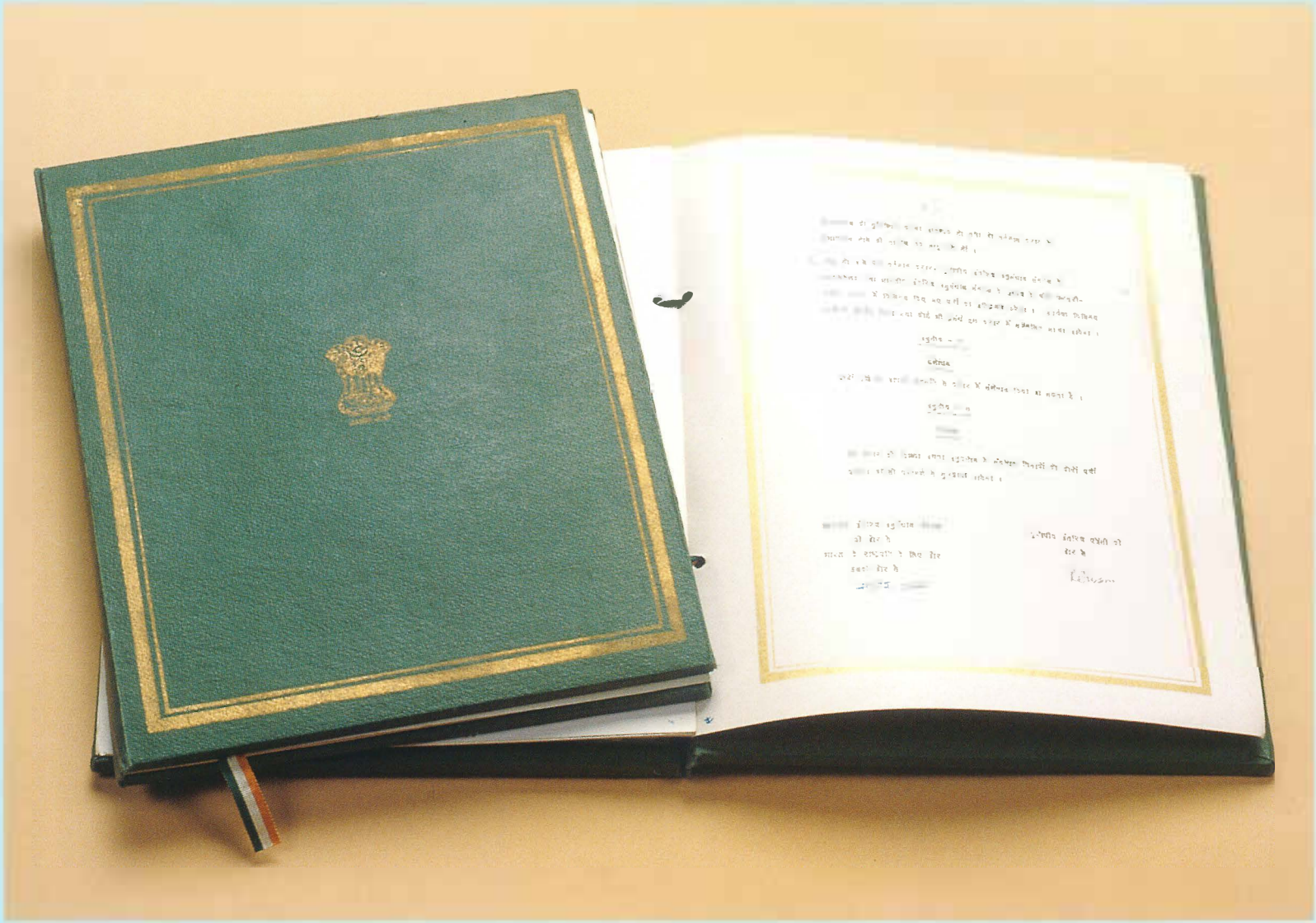
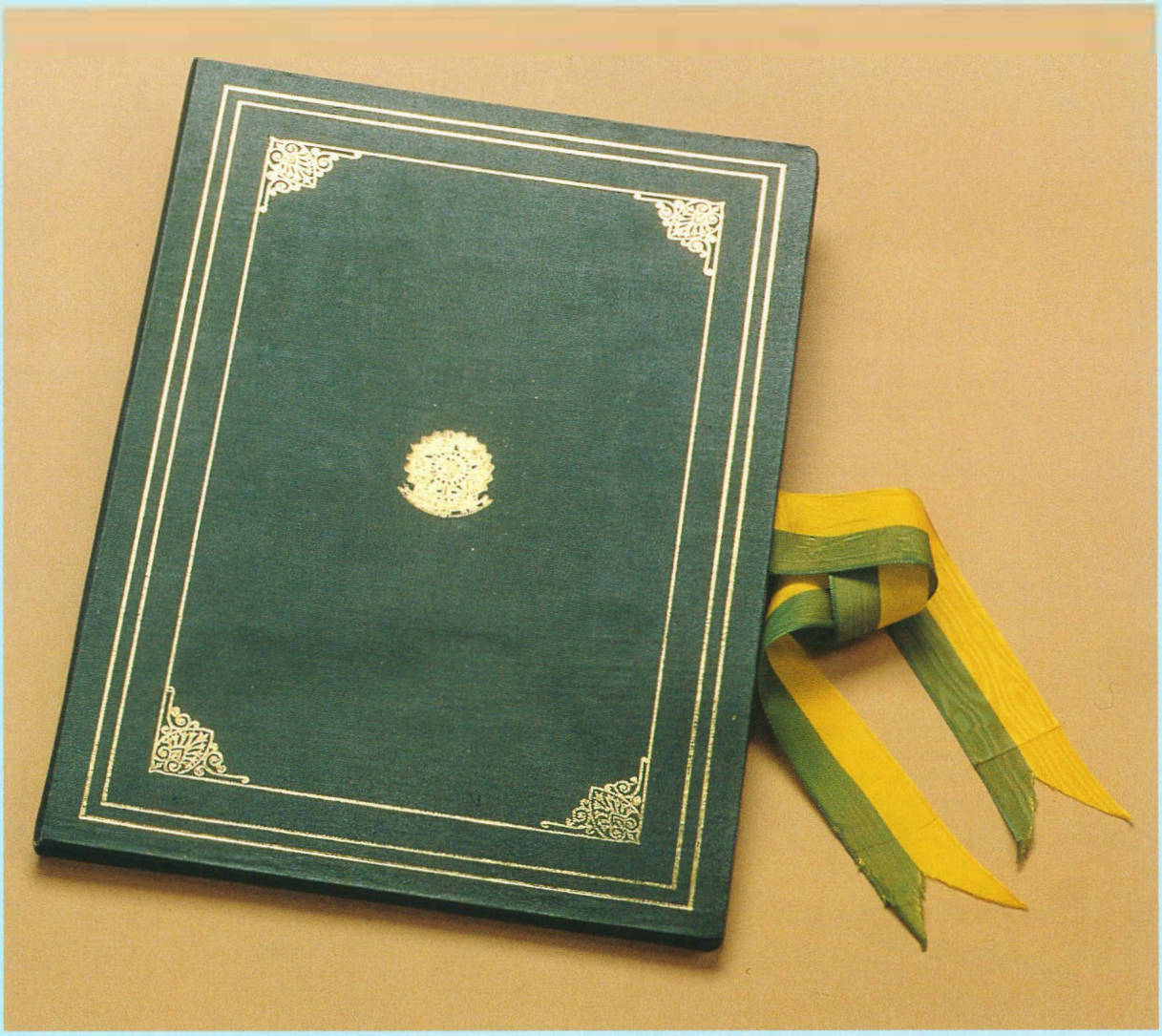
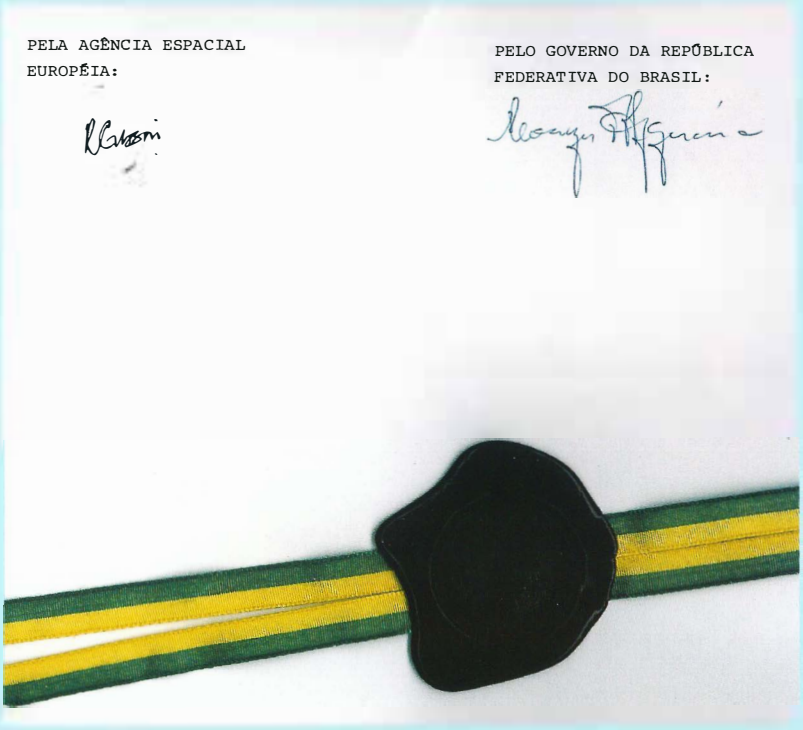


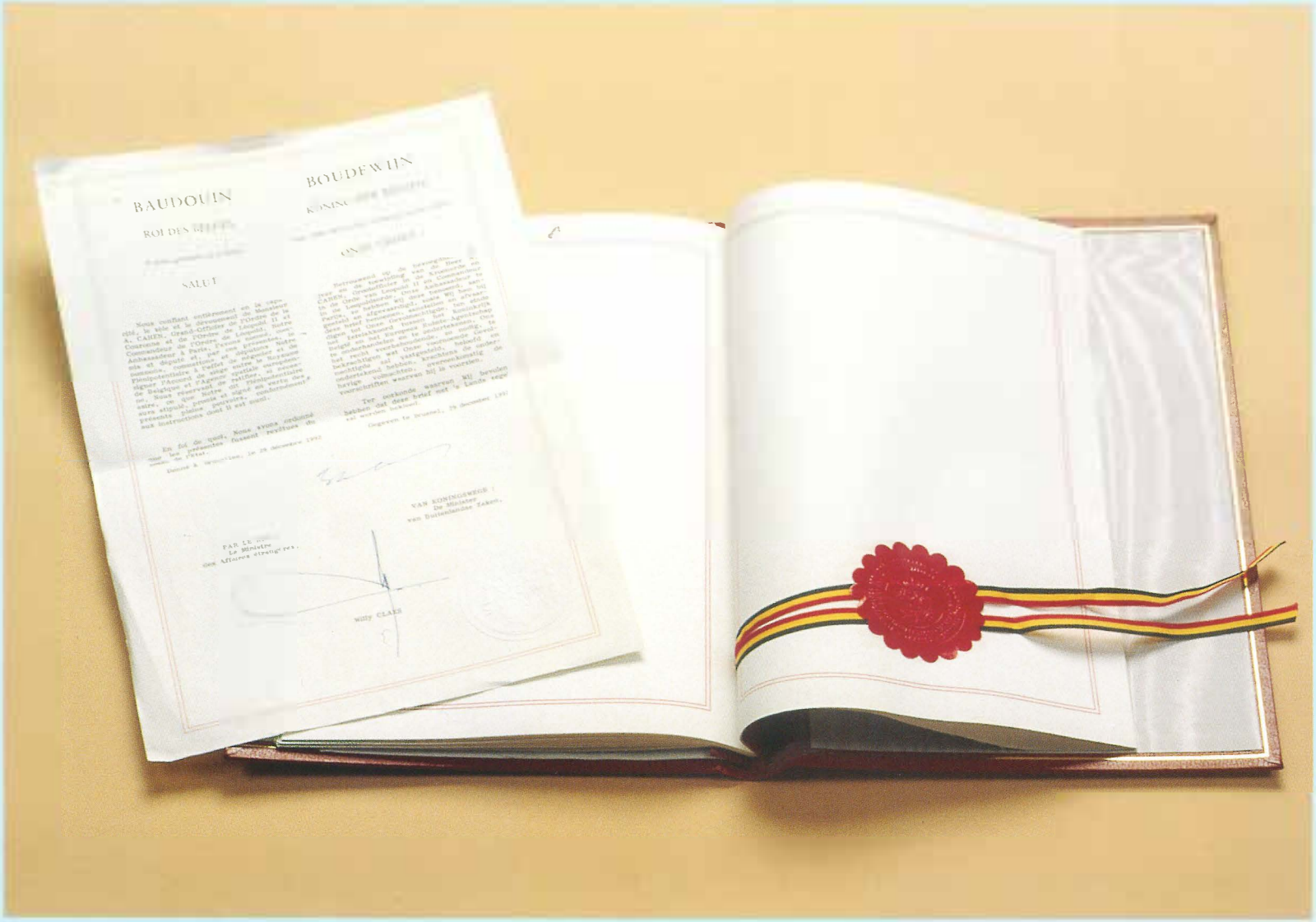
23 bis. Cooperative Agreement between the President of India, represented by the Indian Space Research Organisation, and the European Space Agency, made in two originals copies (in Hindi and English), signed on 14 April 1988.





24. Agreement between ESA and the Federal Republic of Brazil on the setting-up and use of tracking and telemetry facilities on Brazilian territory made in two originals (in French and Portuguese), signed in Brasilia by R. Gibson (ESA) and M.B. Potyguara on 20 June 1977.

25. Ratification Instrument. Agreement between the Republic of Austria and ESA on Austria's accession to the Convention of the European Space Agency, and Related Terms and Conditions, signed on 12 December 1985 and entered into force on 1 April 1986.



26. Headquarters Agreement between the Kingdom of Belgium and the ESA, signed by J-M. Luton (ESA) and His Excellency A. Cahen, on 26 January 1993.

MINUTE

The Chairman of the Council and the Director General of the European Space Agency have the honour to present their compliments to the Ambassador of the United States of America, and to present this Note on the following subject.

Transpace Carriers, Inc (TCI) a US private company selected by NASA to assume responsibility for the Delta programme, filed a petition with the Office of the US Trade Representative on May 25 1984, under Section 301 of the amended Trade Act of 1974. This petition is directed against the Member States of the European Space Agency (ESA) and their space-related instrumentalities. TCI alleges in particular that Arianespace, a French private company in charge of the commercialisation of the Ariane launcher, is able thanks to government subsidies to offer launch services to US companies at rates substantially below those it would charge under normal commercial conditions, and that this results in lost sales for TCI and "a serious threat to the establishment of a US commercial launch services industry".

The filing of this petition has immediately caused the gravest concern among the governments of the ESA Member States and they are therefore currently reviewing the issues raised by this petition.

The undersigned would be most grateful if the Ambassador could inform the Office of the US Trade Representative that a document setting out the European position will shortly be addressed to the Section 301 Committee.

The Chairman of the Council and the Director General of ESA avail themselves of this opportunity to renew to the United States Ambassador the assurance of their highest consideration.

Paris, 7 June 1984

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Date: ....

APPROVED BY
ASST. DIR.:
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Date: .....

APPROVED BY
DIRECTOR:
.....
Date: 7/6

H. Curien
Chairman of Council

E. Quistgaard
Director General

H.E. Ambassador E.G. Galbraith
United States of American Embassy
2, Avenue Gabriel
75008 PARIS

27. Minute of a Letter from Prof. H. Curien (Chairman of the ESA Council) and E. Quistgaard (Director General of ESA) to US Ambassador E.G. Galbraith, dated 7 June 1984.

PART II - SUMMARY AND CONCLUSIONS

1. The practices and policies of the U.S. Government with respect to Shuttle pricing and assistance to U.S. private ELVs have, by comparison to the alleged practices and policies of ESA and its Member States, a substantially greater trade distortive effect in the market for the launch of commercial and foreign satellites. Moreover, by engaging in such practices and policies, it is difficult for the U.S. Government to then criticize, as an unreasonable burden on U.S. commerce, the alleged practices and policies attributed to ESA and the Member States, which even if true would pale by comparison -- both qualitatively and quantitatively -- to the U.S. practices and policies.

2. The Shuttle pricing policies of the U.S. Government fail to recover not only reasonable quantitative cost from commercial and foreign users but, even more significantly, do not recover any cost with respect to certain major elements of cost which directly benefit the commercial and foreign users. These elements for which there is no qualitative recovery include amortization of the orbiter vehicle and the cost of spares, the availability of the latter being an important competitive factor in the marketplace;

3. The failure to make any attempt to recover major cost elements such as amortization of the orbiter and cost of spares is further compounded by the effects of overly optimistic launch rate and learning curve assumptions. These are factors which a private ELV operator such as Arianespace cannot afford not to recover nor to properly project.

4. The U.S. Government assistance accorded to private U.S. ELVs, as evidenced by the 12.5 percent discount accorded TCI in taking over certain Delta facilities as well as the codification of direct cost as the reimbursement standard for launch support services, are evidence of further U.S. Government assistance to the private ELV launch industry.

27bis. Aide mémoire presented to the President of United States by the member Governments of the European Space Agency at the conclusion of consultations held with the US Government on the Commercialisation of Space Launch Activities, part II: Summary and Conclusions (following the Petition seeking presidential action under Section 301 of the Trade Act of 1974 as amended (19 U.S.C § 2411, et sq.) filed on the behalf of the Civil, Expendable Launch Vehicle Services Industry by Transpace Carriers, Inc. against the Governments of Belgium, Denmark, France, Germany, Ireland, Italy, The Netherlands, Sweden, Spain, Switzerland and the United Kingdom and their space-related instrumentalities, 25 May 1984).

Note for Editors

On 17 July 1985, the President of the United States signed a decision relieving the European Space Agency and its Member States from any further investigation or action under Section 301(a) of the U.S. Trade Act of 1974 as amended (19 U.S.C. 24 11(a)), a statute aimed at protecting U.S. foreign trade interests.

It will be recalled that on 9 July 1984 the Section 301 Committee of the U.S. Trade Representative had, upon a petition filed by Transpace Carriers Inc., a U.S. private launch industry, initiated an investigation to assess the substance of the following four allegations made by TCI: 1) that Arianespace uses a two-tier pricing policy whereby it charges a higher price to ESA Member States than to foreign customers; 2) that the French national space agency (CNES) subsidises launch and range facilities, and services and personnel provided to Arianespace; 3) that CNES subsidises the administrative and technical personnel it provides to Arianespace; 4) that Arianespace's mission insurance rates are subsidised.

While the U.S.T.R. Section 301 Committee was investigating these four allegations, the Member Governments of ESA entered into a series of four consultative meetings with the United States Government to exchange views on, and to assess better, the extent of governmental assistance in the provision of launch services, in particular when these services are provided on a commercial basis on the world market of satellite launches. The U.S. Government also investigated the following three areas: government inducement to purchasers of Arianespace's services; direct and indirect government assistance to Arianespace; and Arianespace's cost and pricing policies.

The presidential decision of 17 July last determines that "the practices of the Member States of the European Space Agency (ESA) and their instrumentalities with respect to the commercial satellite launching services of Arianespace S.A. are not unreasonable and a burden or restriction on U.S. commerce". It further declares that all four allegations made by TCI lacked any evidence and, where practices of government assistance were found, as publicly admitted by ESA and the Member States, these practices were entirely comparable with U.S. Government practices in the same areas. It further states that "since there are no international standards of reasonableness for launch services", the only possible manner for assessment was to compare European Government practices with U.S. Government practices in the same field of activity.

27 ter. Decision by the US President ending assertions by US Companies against Ariane Commercial Launch Policies. Note to the Editors, attached to ESA News Release No. 22, 24 July 1985.

led by ESA together with representatives of the French, German and Swiss Governments, the year's consultations with the Government of the United States have helped to demonstrate, if needed be, that the Ariane launcher family, as well as the institutional framework of its operations on the world commercial market, were the most prominent factors in promoting the conditions for fair and healthy competition on that market in the interests of all customers of launch services.

Having concluded the consultations on 20 May 1985, the ESA Member Governments decided to make known their views, evaluations and conclusions to the U.S.Government in an aide-mémoire addressed to the President of the United States which was handed to him by the Ambassadors of France, Germany and Switzerland in Washington D.C. on 12 July 1985. In this aide-mémoire the ESA Member Governments stressed their belief that "it is in the mutual interest of both the U.S. and European Governments and industries to foster an international climate in which the Shuttle, the U.S. expendable launch vehicles and Arianespace and any other launch system operators can openly and fairly compete for commercial and foreign customers on the basis of their respective launcher's merits and their commercial activities".

ESA takes due note of the last paragraph of the presidential decision which announces that U.S. Government policies in this area are currently undergoing revision and that at some point in the future "it may be in our mutual interest to engage in international discussions aimed at establishing appropriate guidelines for the commercial launch industry".

LE PRÉSIDENT DE LA RÉPUBLIQUE

PARIS, le 10 novembre 1987

Message adressé à Monsieur Reimar Lüst

Directeur Général de l'Agence Spatiale Européenne

La réunion des ministres européens de l'espace qui vient de s'achever à La Haye marque une étape importante pour le programme spatial européen.

L'accord sur les grands projets qui seront réalisés avant la fin du siècle s'inscrit dans les perspectives ambitieuses de la conférence qui s'était tenue à Rome au début de 1985.

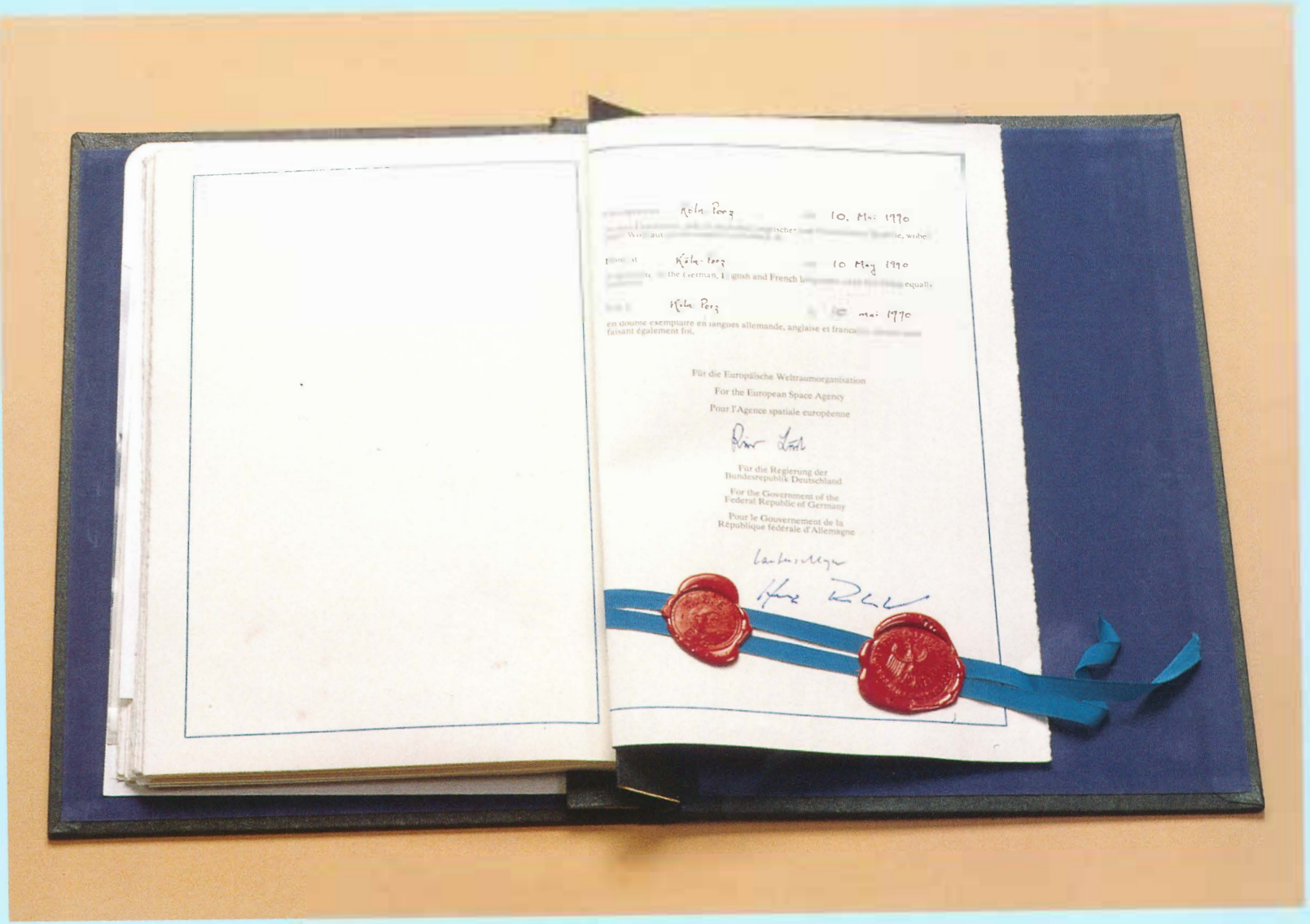
Il jette les bases d'une coopération solide entre les partenaires européens et nous met sur la voie d'un programme spatial indépendant.

Je me réjouis de ce succès qui doit beaucoup, je le sais, à votre action personnelle. J'en suis heureux pour l'Europe et pour chacun de nos pays.

F. Mitterand

François MITTERRAND

28. Message from François Mitterrand, President of the French Republic, to Prof. Reimar Lüst, Director General of ESA, dated 10 November 1987, after the Ministerial Conference in The Hague.



29. Agreement between the European Space Agency and the Government of the Federal Republic of Germany concerning the European Astronauts Centre, made at Köln-Porz on 10 May 1990 and signed by Prof. Reimar Lüst and Dr. Heinz Riesenhuber.

esa NEWS RELEASE
european space agency

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for release

Press Release N° 8
Paris, 21 mars 1990

ESA Council approves the Agreement between the Federal Republic of Germany and the Agency for the setting up of the European Astronauts Centre (EAC) in Cologne

The European Space Agency's Council meeting at ESA Headquarters in Paris on March 20-21, 1990, has approved the Agreement between the Federal Republic of Germany and the Agency on the setting up of the European Astronauts Centre (EAC).

The Delegates were unanimously in favour of this new ESA establishment which will be located in Cologne, (Köln, Porz) and dedicated to the selection, recruitment and training of European astronauts.

The EAC will provide the astronauts for Columbus and the Hermes Space Plane which are part of the Long Term Plan agreed by the Ministerial Council in the Hague in 1987.

Last year, in June 1989, the ESA Council had unanimously approved the policy on European Astronauts.

A single European astronauts corps for the ESA missions will be set up under the authority of the Director General.

The policy defines the selection procedures for the European astronauts. The pre-selection will be done by Member States. The final selection will be ESA's responsibility. The aim is to have at least one national from each Member State become a member of the corps. When building up this corps the Agency will use the experience and resources existing in Member States.

The Columbus and Hermes programmes are the key to further European manned spaceflight and are the first steps to Europe's autonomy in Space.

For further information, please contact :
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Public Relations Division, ESA/Paris
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or

Mr Andres Ripoll
Head of the European Astronauts Centre
EAC-European Astronauts Centre
Tel : (49)2203.601.34.40

29 bis. ESA Council approves the Agreement between the Federal Republic of Germany and the Agency for the setting up of the European Astronauts Centre (EAC) in Cologne - ESA News Release No. 8, 21 March 1990.

29 ter. Astronauts of the European Space Agency, in September 1998. Left to right : Christer Fuglesang, Umberto Guidoni, Claude Nicollier, Gerhard Thiele, Hans Schlegel, Jean-François Clervoy, Jean-Pierre Haigneré, Leopold Eyharts, Thomas Reiter, Roberto Vittori and Paolo Nespoli.

ESA/C(94)146
Att.: ESA/PB-ARIANE/LXXXV/
Dec. 2 (Final), rev. 5
Paris, 30 November 1994
(Original: English)

EUROPEAN SPACE AGENCY

COUNCIL

DECLARATION ON THE EUROPEAN MANNED SPACE TRANSPORTATION PROGRAMME (THE REORIENTED HERMES PROGRAMME)

The participating States referred to below (hereinafter referred to as "the participating States"),

I. AGREE to execute the Hermes programme in the form of a European manned space transportation programme, on the basis of the programme proposal of the Director General (ESA/PB-ARIANE(92)60, rev. 5) referred to in the preamble.

II. APPROVE the European manned space transportation programme 's orientation and its general objectives as set out in the Annex A of this Declaration.

III. NOTE that the European manned space transportation programme, as defined in the Director General's proposal referred to in the preamble, introduces a reorientation period of three years from 1 January 1993 for carrying out studies, definition and technology activities on a crew and cargo transport vehicle and orbital intervention facilities; this programme includes preparatory activities for a Crew Transport Vehicle (CTV) and pre-development of an Automated Transport Vehicle (ATV), an European Robotic Arm (ERA) and an Extra-Vehicular Activity suit (EVA) as elements of the programme, it being understood that these elements should preferably be developed and utilised within the framework of Space Station cooperation, in agreement with the Partners.

30. Extract from the Declaration on the European Manned Space Transportation Programme (the re-oriented Hermes Programme), drawn up on 15 December 1987, amended on 23 November 1994 (ESA/C(94)146).

ESA/PB-ARIANE/LXXXV/Dec.2(Final), rev. 5

ANNEX A

Objectives and Content of the Manned Space Transportation Programme for the Period 1993-1995

1. PROGRAMME OBJECTIVES

The Manned Space Transportation Programme activities for the period 1993-1995 constitute the first step of a long-term strategy which aims at providing Europe with a space transportation system for the support of manned activities in low Earth orbit, possibly in cooperation with other spacefaring nations.

This space transportation system shall have the following capabilities:

- regular transport of personnel to and from space stations,
- regular servicing of space stations through the transport and recovery of cargo,
- external intervention on space infrastructure elements,

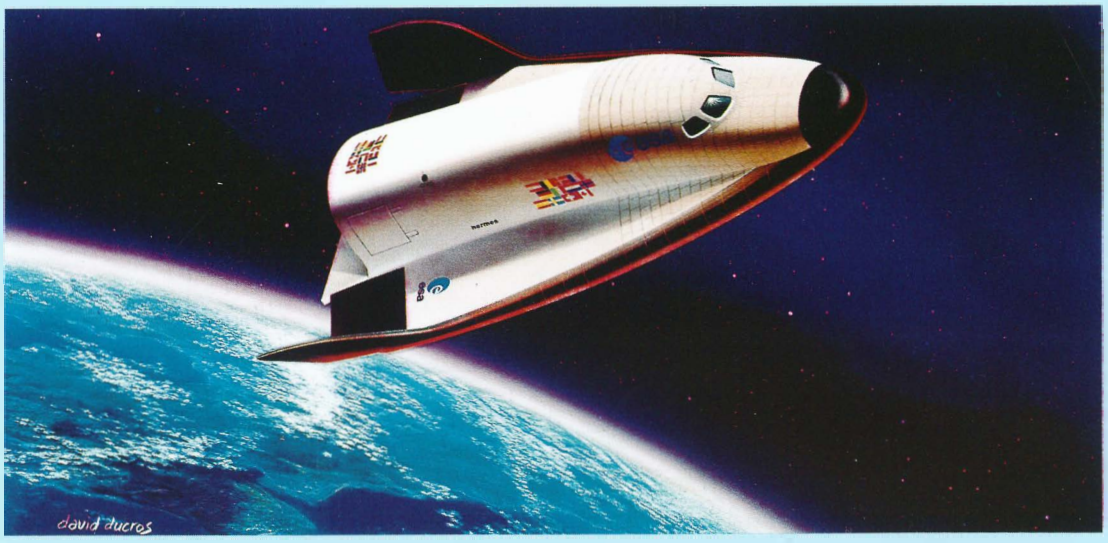
and will utilise the Ariane 5 launch vehicle.

The above capabilities shall be achieved in a three-step approach:

- Step 1 consists of the analysis, selection and definition of a suitable concept, together with the necessary supporting technology effort.

- Step 2 shall demonstrate the European capability to transport and support man in space and, in parallel, develop the elements for external servicing. The demonstration of the European capability will, at the same time, allow for the qualification of Ariane 5 as a man-rated launch vehicle.

- Step 3 would cover follow-on developments and the utilisation of the manned space transportation system, for the transport of crew and cargo to and from space stations on a regular basis. In parallel, based on the technical capabilities achieved in manned space transportation systems by that time, Europe could envisage to participate in the development of vehicles for manned missions to the Moon in the framework of an international cooperative venture.



JOINT STATEMENT
OF THE
SPACE STATION PARTNERSHIP

Washington
December 6, 1993

Today, representatives of the United States, Canada, Japan, and certain member states of the European Space Agency (Belgium, Denmark, France, Germany, Italy, Netherlands, Norway, Spain and the United Kingdom) have taken an historic step toward advancing the peaceful exploration of space. Meeting in Washington on December 6, 1993, they have decided to extend a formal invitation to the Government of the Russian Federation to join the international Space Station program.

This decision follows from the agreement of the Space Station Partner Governments at the Intergovernmental Meeting in Paris on October 16, 1993, to explore collectively with Russia possible Russian partnership in the international Space Station program, and to work together to develop an integrated plan for Russian involvement. It results from the ensuing intensive consultation among the partners, both at the governmental and cooperating agency level.

In reaching this decision, the Partners recognised that Russia, with its impressive records of accomplishments in space, including its wealth of experience in human space flight activities, could make valuable contributions to this program. The Partners also recognized that Russian involvement in this program would represent important progress toward their shared objective of building broad cooperative relationship with Russia.

The Partner Governments agreed that, pursuant to their desire to include Russia as a partner, the expanded partnership would operate consistent with the Intergovernmental Agreement of September 29, 1988, on cooperation in the Detailed Design, Development, Operation, and Utilization of the Permanently Manned Civil Space Station. They agreed to work together in the months ahead on the necessary legal instruments to include Russia in the partnership.

The Joint Invitation is being conveyed to the Government of Russia through diplomatic channels.

31. Joint Statement of the Space Station Partnership, dated 6 December 1993.

31 bis. Signature of the International Space Station Memorandum of Understanding at the US State Department, Washington DC, on 29 January 1998. Seated, from left to right: Yuri N. Koptev (RSA), Antonio Rodotà (ESA), Daniel S. Goldin (NASA), William Mac Evans (CSA) and Isao Uchida (NASDA).

31 ter. Memorandum of Understanding between ESA and NASA concerning cooperation on the civil International Space Station (two originals in English, French, German and Italian).

European Space Agency
Agence spatiale européenne

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